Washington State NFPA 5000 Technical Advisory Group

Report of Findings

NFPA 5000, Building Construction and Safety Code

December 10, 2002

NFPA 5000 Technical Advisory Group
appointed by the
Washington State Building Code Council
Administered by the Department of Community, Trade and Economic Development

NFPA 5000 TAG
REPORT OF FINDINGS
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INTRODUCTION

The purpose of this Technical Advisory Group (TAG) is to hear an overview of the NFPA 5000 Building Code by National Fire Protection Association (NFPA) staff and forward a Report of Findings to the State Building Code Council regarding the technical provisions, subject content, format and usability of the NFPA 5000.

This Report of Findings includes response to ten questions as assigned on the TAG Work Plan. PART 1 reports responses to questions 1 through 6, which are based on the State Building Code Act, *RCW 19.27.020 Purposes—Objectives—Standards.* PART 2 includes questions 7 through 10, which focus on the content and usability of the NFPA 5000 Building Code.

SUMMARY OF FINDINGS

Part 1

The TAG members were directed to respond in writing to questions 1 through 6 with a "yes" or "no", and add any appropriate comments. The yes/no responses are listed below. Please see the Appendix B for the written responses and comments submitted by individual TAG members.

(1)* Does the NFPA 5000 *require minimum performance standards and requirements for construction and construction materials, consistent with accepted standards of engineering, fire and life safety?

TAG Response: YES—15; NO—2

(2)* Does the NFPA 5000 *require standards and requirements in terms of performance and nationally accepted standards?

TAG Response: YES—15; NO—0

(3)* Does the NFPA 5000 *permit the use of modern technical methods, devices and improvements?

TAG Response: YES—13; NO—2

(4)* Does the NFPA 5000 *eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements, which could unnecessarily increase construction costs?

TAG Response: YES—8; NO—7

(5)* Does the NFPA 5000 *retard the use of new materials and methods of installation?

TAG Response: YES—5; NO—9

(6)* Does the NFPA 5000 *provide unwarranted preferential treatment to types or classes of materials or products or methods of construction?

TAG Response: YES—3; NO—11

Part 2

Following the TAG discussion of questions 7 and 8 it was determined that Council staff should provide a summary of what the NFPA 5000 covers and how it is arranged. TAG members were to provide written response for questions 9 and 10, answering with a "yes" or "no" and any appropriate comments. The yes/no responses are listed below.. Please see the Appendix B for written responses and comments submitted by individual TAG members.

(7) What does the NFPA 5000 cover?
The Scope of the *NFPA 5000, Building Construction and Safety Code is* stated in Section 1.1.1: "The *Code* addresses those construction, protection, and occupancy features necessary to minimize danger to life and property."

The *Code* sets broad goals (including safety, health, building usability, and public welfare) and objectives (which address fire, structural failure, hazardous materials, building use, interior environment, uncontrolled moisture, lighting, sanitation, accessibility, energy efficiency, etc.) that can be satisfied through either prescriptive design approaches using Chapters 1-4 and 6-55, or performance-based design approaches using Chapters 1-5.

From Section 1.2: "The purpose of the *Code* is to provide minimum design regulations to safeguard life, health, property, and public welfare and to minimize injuries by regulating and controlling the permitting, design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures within the jurisdiction and certain equipment specifically regulated." Section 1.3.1 addresses Buildings and Structures: "The provisions of the *Code* shall apply to the construction, alteration, repair, equipment, use and occupancy, maintenance, relocation, and demolition of every building or structure, or any appurtenances connected or attached to such buildings or structures within the jurisdiction."

Section 1.3.4 states the *Code* applies to existing buildings when (1) there is a change of use or occupancy classification, (2) a repair, renovation, modification, reconstruction, or addition is made, (3) the building or structure is relocated, or (4) the building is considered an unsafe building or a fire hazard.

(8) How is the NFPA 5000 arranged?

The format of the *NFPA 5000, Building Construction and Safety Code* is occupancy based, following the model of the *NFPA 101, Life Safety Code*. With the occupancy-based format, non-structural requirements for each occupancy are located within one of the specific Occupancy Chapters 16-34. For any additional requirements applying to that occupancy, the code user is lead by references to other chapters and sections. The *Code* also has an annex (appendix), which is utilized as appropriate. The arrangement of the *NFPA 5000* chapters can be grouped as follows:

- General (Chapters 1-15)
- Occupancies (Chapters 16-34)
- Structural (Chapters 35-40)
- Materials (Chapters 41-48)
- Building Systems (Chapters 49-55)
- Annex Information (Annexes A-D) and Index

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(9) Can the NFPA 5000 be understood by various users including but not limited to:

a. Homebuilders;
b. Professional designers;
c. Specifiers;
d. Code enforcement personnel.

TAG Response: YES—11; NO—4.

(10) Does the NFPA 5000 have an identifiable and transparent process in its creation and maintenance over time?

TAG Response: YES—8; NO—6

Summary of NFPA 5000 TAG Responses

Participating **Interest Groups** (Principal Representative)	Yes/No Responses for TAG Report of Findings									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Architects (John Cochran)	Y	Y	N	N	Y	N			N	N
Structural Engineers (John Loscheider)	Y	Y	Y	Y	N	N			Y	Y
Home Builders (Brian Minnich)	N	----	Y	N	N	N			N	N
Plumbing Industry (Dan Sexton)	Y	Y	Y	Y	----	N			Y	Y
Mechanical Engineers (Dale Shafer)	N	Y	----	N	----	----			Y	----
Mechanical Contractors (Larry Stevens)	Y	Y	Y	Y	Y	Y			Y	Y
Electrical Contractors (Jerome Geissler)	Y	Y	Y	Y	----	----			Y	Y
Building Officials (Leonard Yarberry)	Y	Y	Y	N	N	N			N	----
Fire Marshals (John McDonald)	Y	Y	Y	Y	N	N			Y	N
State Fire Marshal's Office (Anjela Foster)	Y	Y	Y	----	N	N			Y	Y
Manufacturers (Jim Crowell)	Y	Y	----	----	Y	----			----	N
Building Operators (Bill Patterson)	Y	----	Y	N	Y	Y			N	N
State Agencies (Tim Hardin)	Y	Y	Y	Y	N	N			Y	Y
Cities (Maureen Traxler)	Y	Y	Y	Y	N	N			Y	----
Counties (Dave Cantrell)	Y	Y	Y	N	N	N			Y	N
Trade Associations (Joe Baca)	Y	Y	Y	N	N	N			----	Y
NWHPBA(Hearth Products) (Terri Hotvedt)	Y	Y	N	Y	Y	Y			Y	Y
Model Code Organizations	(Not Voting Members)									

NOTE: Questions 7 and 8 answered by Council Staff.

APPENDIX A
TAG PARTICIPANTS

TAG Members Providing Comments on TAG Work Plan Questions
(* Principal Voting Representative)

Sue Alden	Architect
Gary Allsup	WABO and City of Lacey
Joe Baca *	Pacific Northwest Regional Council of Carpenters
Lee Bailey	WABO and City of Burien
Jerry Barbera	SeaTac Airport Building Department
Don Breiner	Architect
Phil Brazil	Structural Engineers Association of Washington
Joe Brewer	NFPA
Dave Cantrell *	Snohomish County
Alan Carr	ICBO
John Cochran *	Architect
Jim Crowell *	'enLighten' (new construction technology)
Anjela Foster *	Washington State Fire Marshal's Office
Jerome Geissler *	National Electrical Contractor's Association
Tim Harden *	WA State Department of Health
Terri Hotvedt *	NW Hearth Products and Barbecue Association
John Loscheider *	Structural Engineers Association of Washington
MaryKate Martin	WABO and City of Federal Way
John McDonald *	WA State Association of Fire Marshals
Brian Minnich *	Building Industry Association of Washington
Ole Olsen	Pacific Northwest Regional Council of Carpenters
Bill Patterson *	Building Operators
Dwight Perkins	IAPMO
Dan Sexton *	WA State Association of Plumbers & Pipefitters
Dale Shafer *	SBCC, Mechanical Engineer
Larry Stevens *	Mechanical Contractor's Assoc. of Western Washington
Kraig Stevenson	ICBO/ICC
Maureen Traxler *	City of Seattle DCLU
Leonard Yarberry *	WABO and City of University Place

Additional TAG Participants

Dave Saunders, TAG Chair	SBCC, Building Officials
Bob Eugene	Underwriters Laboratory
Larry Fischer	Plumbing, Heating and Cooling Contractors of WA
Rick Ford	SBCC, Commercial Construction
Jennifer Kunkel	BIAW
Steve Nuttall	SBCC, Fire Services
Paul O'Connor	Fire Sprinkler Advisory Board of Puget Sound
Steven Pfeiffer	City of Seattle DCLU
Tony Richter	Boeing
Dale Wentworth	HVAC-R Industry
Gary Wilkerson	SeaTac Airport Building Department

APPENDIX B
COMMENTS AND RESPONSES TO NFPA 5000 TAG WORK PLAN QUESTIONS

Answers to Questions One through Ten

Does the NFPA 5000 Building Code…

Question 1 - Require minimum performance standards and requirements for construction and construction materials, consistent with accepted standards of engineering, fire and life safety?

Sue Alden:

Yes. I am sure that was the intent, as stated in Section 1.2. Yet, some requirements are more stringent than those in other nationally accepted codes and standards.

Gary Allsup:

Yes, sections 1.5.4 makes reference to "standards" referenced in this code.

Joe Baca and Ole Olsen:

Yes. The minimum standards and requirements are somewhat hard to find when you are looking for specific standards.

Lee Bailey:

A qualified yes. While this document's stated purpose is to establish minimum requirements for engineering, fire and life safety, further study shows that the minimums established in this document exceed those which the state has historically considered "minimums".

Jerry Barbera:

Yes and no. Yes, because in the main, the words in the document mostly try to do this.

No, because of Section 1.5, which addresses use of alternatives to code provisions, and uses the word, "at least equal to" and "at least equaled" in Subsections 1.5.4 and 1.5.6. Those terms are used as transitive verbs and have the meaning, "to be identical in value to" according to the latest

edition of the Merriam-Webster Collegiate® Dictionary. This can have the effect of limiting potential use of other standards unless they were "more stringent than."

Don Breiner:

Yes, per Section 1.2 stating the purpose of NFPA 5000. However, some requirements are more stringent or less stringent than other model codes and would require numerous State amendments if it is desired to maintain consistency with current practices. Additionally, the use of subjective wording in NFPA 5000 would require State amendments to prevent code users from misinterpreting the intent of this code.

Phil Brazil:

Yes, for the most part. The structural standards that are referenced are generally minimum performance standards. However, this is not true of the prescriptive (non-engineered or pre-engineered) requirements for the design of one- and two-family dwellings, especially with respect to the support of wind and earthquake forces. Several reference publications are listed in Section 35.1.2.3 for use. The code official is required to permit a designer to use any of the publications. It is not possible to determine a minimum performance standard without designing an entire structure in accordance with each of the publications and comparing the results, which would very likely not lead to a reliable conclusion. Also, Section 35.1.2.3 is in possible conflict with Section 45.4.1.3, which requires the code official to permit a designer to use the AF&PA WFCM publication, one of six reference publications in Section 35.1.2.3.

Joe Brewer:

Yes, the NFPA 5000 sets the most current standards for construction, materials and standards for engineering and fire and life safety.

Dave Cantrell:

Yes. However, determining the minimum provisions can be difficult at times.

John Cochran:

Yes, qualified as follows. The intent seems to be indicated in Section 1.2. However, standards for many specific building elements and systems are not easily determined. There are many instances in the code where subjective wording such as, reasonable, acceptable, untenable, and others are used. This will cause difficulty for designers to determine what is required and for building officials to interpret. Extensive amendments will be required to correct such language and also accommodate the regional differences within Washington.

Jim Crowell:

Yes. However, they are not easily obtained from this manual.

Anjela Foster:

Yes. Performance standards in terms of fire and life safety exceed those in other codes. This is evident in the secondary protection provided in the event of a system failure.

Jerome Geissler:

Yes. Just like other building codes, it appears the NFPA 5000 requires minimum performance standards and requirements for construction and construction materials based on a safety focus. The NFPA 5000 looks like the most current and up to date building code available today. It appears consistent with all current and accepted standards of engineering, fire, and life safety, much more then any other building code. Significantly, this code, NFPA 5000, includes reference standards for structural safety that are the most current standards mandated by FEMA.

Tim Harden:

Yes, the NFPA 5000 does require minimum performance standards.

Terri Hotvedt:

Yes.

John Loscheider:

Yes. This is the stated purpose of NFPA 5000, which is identified in Section 1.2. It is also consistent with the stated purpose of the NFPA, which is identified in Article 1 of their bylaws.

MaryKate Martin:

The language of section 1.2 Purpose- states "The purpose of the *Code* is to provide minimum design regulations…." So the short answer is yes. However, a quick review of several chapters of the code appear to have established a "minimum" that is significantly different from what the State of Washington as accepted as minimum performance standards in the past. (For example, see NFPA 5000 section 4.1.3.2.2 for higher than current minimum requirements as well as the performance design provisions in Chapter 5).

Unfortunately, insufficient time was provided by this process to fully evaluate the impacts of the requirements of this document. Because the organization and written style of the document is significantly different from current State code language, a complete answer to this question, which on the surface is a simple one, is not possible. Furthermore, this document has had no practical application anywhere in the country, rendering any answer somewhat hypothetical.

John McDonald:

Yes. As stated in Section 1.2, the purpose of the NFPA 5000 Building Code is to provide minimum design standards and requirements for the protection of life, health, property and

public welfare. While some individuals or groups may argue that the minimums established in the code are overly restrictive or not enough so, they are minimums nonetheless and are consistent with accepted standards.

Brian Minnich:

No. From the builders' perspective, BIAW strongly questions whether or not the standards contained in NFPA 5000 are truly minimum. BIAW believes that many of these standards unnecessarily exceed accepted standards for engineering, fire and life safety and will increase the cost of housing in Washington State. It appears that some the standards referenced in the NFPA 5000 are recognized nationally – others are not.

Bill Patterson:

Yes. Assume this means establishes minimum performance standards and requirements for construction and construction materials consistent with accepted standards of engineering, fire, and life safety.

Dwight Perkins:

Yes, the NFPA sets an acceptable minimum level of safety in all areas of concern, structural, fire, health and safety.

Dan Sexton:

Yes. Just like any other building code, the NFPA 5000 requires minimum performance standards and requirements for construction and construction materials. This code sets minimum requirements based on an expected level of safety. The committees that developed these provisions are national experts in the fields covered by the building code, these minimum levels of safety are considered to be objective and recognized by all affected interests. The NFPA 5000 is the most current and up to date building code; it is consistent with all current and accepted standards of engineering, fire, and life safety, much more then any other code. In fact the referenced standards for structural safety are the most current standards mandated by FEMA. This is accomplished by specific and straight references to the 2002 edition of ASCE 7. The structural loads and material standards are referenced without any modification in the model code, which is what is demanded by the federal government, FEMA. This model building code does not revise standards such as ASCE 7, ACI 318. This ensures that the provisions are meeting the acceptance of the national structural engineering community. This holds true for all the standards adopted by reference in the NFPA 5000.

Dale Shafer:

No. Although NFPA 5000 does require a level of performance, in many instances this level is not consistent with the currently accepted standards for the State of Washington.

Examples:

a. NFPA 5000 requires that all mechanical rooms in E Occupancies be fire rated no matter the size of equipment contained therein (17.3.2.1). Current standard allows small equipment to be in an unrated room. Other occupancies have similar requirements. This will greatly increase the cost of a small furnace room by adding such things as rated walls, labeled doors, smoke fire dampers, fire sprinklers, etc.
b. NFPA 5000 reduces by 9% the allowable area for a small assembly building (A3) with non-rated wood construction (V-000.) This significantly reduces the standard to which small non-profit groups, churches, etc. can economically build to.
c. NFPA 5000 allows schools under 20,000 square feet to not have fire sprinkler systems. Washington State's adopted standard requires all E (educational) Occupancies to be sprinkled.
d. The requirements for fire sprinklers, fire alarms, etc. are significantly different than current Washington State standards.

These changes might be considered positive or negative, depending on one's point of view. The main point is that NFPA 5000 does not reflect the currently accepted standards for safe construction in the State of Washington.

Larry Stevens:

Yes. NFPA 5000 clearly meets the statutory purposes, objectives, and standards, the first purpose of which is clearly stated ". . . to promote the health, safety and welfare of the occupants or users of buildings and structures and the general public . . .." While some participants would like to see a code with the "most minimal" of standards and others would like the "cheapest" standards, we believe the legislature definitely wanted a building code with "health, safety and welfare" standards and requirements, consistent with other accepted standards. The National Fire Protection Association has been writing these kinds of national standards for over a hundred years.

Kraig Stevenson:

It has its own designated minimum standards noted therein. Not all of the standards noted in the code are considered or recognized as minimum national accepted standards for a minimum.

The NFPA 5000 has "Referenced Publications" some of which are standards that are recognized nationally as design standards for construction, materials and accepted engineering standards, and some that are not. The transgression here is that these documents are called " referenced publications" this implies any type of a publication can be referenced and used in the NFPA code. Some are regional standards and are not recognized as a national standard. Many publications don't have enforceable language so they could be considered only as voluntary and not needing to be complied with. Other referenced publications are not even written in proper standards language. The door is open that will create for the AHJ difficulties with enforcing the NFPA code. This will cause the intended provisions of the code to be compromised and unenforceable.

When you look at section 1.5.5 Systems, Materials, and Methods and combine this with other sections of the code such as 1.5.6 Approval, and 1.7.3.7.1 and 1.7.3.7.2 governing the appeals board and their authority to modify the code, this results in the fact that the appeals board can modify any decision (emphasis any decision) made by the AHJ and this results that no nationally recognized standards are part of the code, because the appeals board can rule they don't apply or that they don't have to be followed.

Additionally we don't believe the following Goals and Objectives in Section 4.1 are consistent with the above goals stated in item (1).

Section 4.1.3.3.2.3 requires that design and construction of buildings provide reasonable safety for occupants and workers during construction and demolition. Safety of workers and occupants during construction and demolition is typically an issue for contractors and owners.

Section 4.1.3.4 Safety from Hazardous Materials requires that people and property be protected from the consequences of unauthorized discharges, fires and explosions involving hazardous materials. No Protection Levels (quantity thresholds) are cited. Therefore this provision can apply to any facility with any quantity of any hazardous material. Designs must minimize the risk of these events. Designs must also minimize the consequences of such events if they do occur.

Maureen Traxler:

Yes. NFPA 5000 does provide minimum standards. The standards may be higher than appropriate.

Leonard Yarberry:

Yes. The NFPA 5000 is based upon the principal of minimum standards. It appears that the majority of the standards referenced are nationally recognized. The performance-based options do however, appear to be a bit too subjective and do not provide clear criteria upon which to evaluate a proposal.

Question 2 - Require standards and requirements in terms of performance and nationally accepted standards?

Sue Alden:

Yes, as listed in Chapter 2 and required in Chapter 5. There are about 430 listed publications, 112 of which are NFPA codes or standards. All are "considered part of the requirements of this document" and must be complied with.

Gary Allsup:

Yes, same response as #1

Joe Baca and Ole Olsen:

Yes. Once a person becomes familiar with this code and how it is written. Not all of the standards and performance terms are natural.

Lee Bailey:

Yes, in fact this document adopts hundreds of standards in their entirety.

Jerry Barbera:

Yes and no, again.

Yes, because the words in Chapters 2, 4 and 5 try to require such National standards.

No, because Chapter 2 makes all the standards cited a part of the code. Since most are not limited to the extent that they need to be considered and Section 1.5 for Alternatives as addressed above tends to limit the use of other national standards unless they are effectively beyond minimums. (The requirement of making referenced standards mandatory is also used with the NFPA partner documents, the IAPMO versions of UPC and UMC, too.)

Don Breiner:

Yes, per list in Chapter 2, in which Referenced Publications (or usually portions thereof) are made part of the requirements of NFPA 5000. In order to adequately correlate the specific requirements of this code with those of the Referenced Publications, users of NFPA 5000 would have to obtain printed or electronic copies of the several hundred publications, and highlight the portions of those documents that apply per Chapter 2.

Phil Brazil:

Yes, for the most part. The vast majority of structural standards are nationally accepted. However, there are exceptions. For example, SBCCI SSTD-10, "Standard for Hurricane Resistant Construction" is a regionally developed standard.

Joe Brewer:

Yes, all are nationally recognized and current. The NFPA 5000 was developed with the most current direction from FEMA as a guide.

Dave Cantrell:

Yes.

John Cochran:

Yes, for the most part. An exception to this, is Chapter 42 Aluminum, where it is stated, "Aluminum construction shall be designed and constructed in accordance with approved standards." These are ambiguous and never defined in the code.

Jim Crowell:

Yes. However, they are not easily located within this manual.

Anjela Foster:

Yes, consistently throughout the document.

Jerome Geissler:

Yes. The NFPA 500 is a prescriptive code, that informs the code user and enforcer what you need to do to accomplish the intent of the code, but includes a performance based design option; no separate code needs to be adopted to specify the performance based design option.

Tim Harden:

Yes, it does require standards and requirements in terms of performance and nationally accepted standards.

Terri Hotvedt:

Yes.

John Loscheider:

Yes, for the most part. In any building code, prescriptive provisions are sometimes necessary when nationally accepted performance criteria are unavailable. Within the structural provisions, it is clear that NFPA 5000 has adopted nationally accepted standards to the maximum possible extent.

MaryKate Martin:

Yes. NFPA 5000 does integrate national standards into the code and in fact adopts them in their entirety without specifically scoping the applicability of the standard to the provisions regulated by the code.

John McDonald:

Yes. NFPA has been promulgating codes and standards on a wide variety of subjects for years. Many of the standards referenced in NFPA 5000, and from which significant portions of the code are extracted, are the nationally accepted standards in the areas of fire and life safety and are referenced by other code writing bodies as well.

Brian Minnich:

Maybe. It appears that some the standards referenced in the NFPA 5000 are recognized nationally while others are not.

Bill Patterson:

Question is unclear, but by Chapter 2. Standards are listed on which compliance is based or stated.

Dwight Perkins:

Yes, the NFPA 5000 is primarily a prescriptive document but does allow a performance based design option to carry out the intent of the prescriptive code provisions. The standards are nationally recognized standards.

With regard to the structural standards, the NFPA 5000 follows the direction of FEMA and primarily reference's to the nationally recognized structural standard.

Dan Sexton:

Yes. I think first and foremost the NFPA 500 is a prescriptive code, in clear language it tells the reader what you need to do to accomplish the intent of the code. However for the design professional or someone that would rather figure out how to do it themselves the NFPA 5000 gives you goals and performance based design options that are clearly spelled out in chapters 4 & 5. If a designer chooses this performance option, the guesswork is taken away from the designer and enforcer in carrying out the intent of the prescriptive code provisions. In the case of the NFPA Building Code, the performance code is part of the building code; no separate code needs to be adopted to specify the performance based design option. All the standards that are referenced in NFPA 5000 are the most current nationally recognized standards.

Dale Shafer:

Yes. NFPA 5000 has taken the position of referring to national standards where possible. To obtain many of the technical requirements one must also refer to a different document (referenced standard.)

Larry Stevens:

Yes. See question (1). NFPA 5000 appears to provide for both prescriptive and performance based construction.

Kraig Stevenson:

See comments above in item # (1) and the NFPA position in the code is unclear.

NFPA's preference to adopt standards by ANSI-accredited standards developers has been made clear from their presentation given to the TAG. Beyond that, it is not clear what criteria are used to evaluate the referenced publications that are listed in Chapter 2 and are part of NFPA 5000. For example, Section 45.4.2 NFPA of 5000 references AF&PA's LRFD Design Manual for Engineered Wood Construction instead of referencing ASCE 16. Neither of these appears to be developed under an ANSI consensus process. ASCE 16 is a standard that is written in mandatory language and is enforceable. The same cannot be said for AF&PA's LRFD Design Manual for Engineered Wood Construction. What evaluation criteria were used by the various NFPA 5000 committees for the referenced publications in Chapter 2? Explain how it results in a reference to a design manual in lieu of a bona fide standard?

Maureen Traxler:

Yes. Most of the standards and requirements are based on nationally accepted standards.

Leonard Yarberry:

Yes. Response as in item #1.

Question 3 - Permit the use of modern technical methods, devices and improvements?

Sue Alden:

Yes. As stated in Section 1.5 and Chapter 5, this is "permitted" but the process for approval can be so cumbersome it may discourage innovation. Section 4.5.4.2, which requires an owner to provide an annual "warrant of fitness" for any performance-based element that is acceptable to the authority having jurisdiction (AHJ), for an unspecified number of years, could discourage owners from accepting innovation. It seems after such extensive proof of compliance for acceptance, a performance-based design should be equal to a prescriptive design, if not better, and such onerous submittals are unwarranted.

Gary Allsup:

Yes, has the intent, but possibly difficult to approve alternates.

Joe Baca and Ole Olsen:

Yes. Although it appears to stumble along, that might just be us being unfamiliar with the codes.

Lee Bailey:

Yes.

Jerry Barbera:

Mostly yes. But for the reasons I cited in Questions 1 and 2 above about Section 1.5, which tries to permit such use, is effectively thwarted by the terms used in that Section because the user has to look for more stringent requirements. The answer to Question 2 shows that the Standard's use of certain words tends to limit use of modern methods because referenced standards are mandatory and one has to look for something else that is "equaled" in the referenced documents.

Don Breiner:

Yes, as in other model codes, Section 1.5 allows for approval by the AHJ of equivalent systems, materials and methods that may not appear within the code. Although if a performance-based design is used to evaluate and approve the alternatives, the building owner is required by Paragraph 4.5.4.2 to "annually certify compliance with the conditions and limitations of the design by submitting a warrant of fitness acceptable to the AHJ. The warrant of fitness shall attest that the building features, systems, and use have been inspected and confirmed as still consistent with design specifications outlined in the documentation required by Section 5.8 and that they continue to satisfy the goals and objectives specified in Section 4.1". Section 5.8 requires documentation of building design specifications, performance criteria, occupant characteristics, design scenarios, input data, assessment methods, output data, safety factors, retained prescriptive requirements, modeling features, evidence of modeler capability, and performance evaluation. There is no stated limit to the number of years that the annual certification is required. Building owners would usually not have the capability to inspect, confirm and warrant the annual certifications; however if the owner retains a design professional or building consultant to prepare the certification, their liability insurance will likely not allow them to provide a "warranty". It appears the NFPA 5000 detailed performance design documentation requirements seriously thwart the stated intent to encourage performance-based design.

Joe Brewer:

The NFPA 5000 is the most contemporary code available today. The NFPA 5000 allows alternate materials and methods with goals clearly outlined in Chapters 4 and 5.

Dave Cantrell:

Yes. Where not specifically addressed, the provisions for alternate methods and materials can be utilized.

John Cochran:

No. The code seems to intend this. However, some TAG members indicated that recent advances in ductwork and gas piping are not acceptable in this code. Many decisions that are deferred to the judgment of building officials may be challenged.

Jim Crowell:

Somewhat. It permits but does not make it easy thus it discourages improvement.

Anjela Foster:

Yes. This code, similar to the other codes allows alternate materials and methods. Gives the AHJ authority to determine compliance.

Jerome Geissler:

Yes. Like any other code, the NFPA 5000 allows for alternate materials and methods of construction, thus allowing for new or emerging design and construction technology.

Tim Harden:

Yes, there is an appeals procedure for this process.

Terri Hotvedt:

No. See comment on "Materials" – Corrugated Stainless Steel Tubing (CSST)

Materials:

Corrugated Stainless Steel Tubing (CSST) installations:

Both current code and the IMC both recognize corrugated stainless steel tubing (CSST) as a generally acceptable material for gas piping*. The NFPA 5000 is untested, but it does include NFPA 211 for the venting chapter, the most fully realized code on Solid Fuel appliances and Masonry fireplaces in the U.S. On the other hand, NFPA 5000 does **not** recognize CSST (corrugated stainless steel tubing) piping for gas appliances!

(*See below: Current law governing CSST applications – WAC 51-42-1311 – Covering generally acceptable materials for gas piping, and includes CSST, which was added as an amendment to our State's Building Code and 2000 IMC p. 19; 2000 IFGC p.50).

WAC 51-42-1311 Material for gas piping.

1311.1 General. Pipe and tubing used for the installation, extension, alteration or repair of

gas piping shall be standard weight wrought iron or steel (galvanized or black), yellow brass, seamless copper tubing, threaded copper, brass, internally tinned copper tubing, or listed Corrugated Stainless Steel Tubing (CSST). Seamless copper tubing may be used for gas piping provided that it conforms with ASTM B 88 (Type K or Type L), ASTM B 280 (Type ACR), or ASTM B 837 (Type G). Copper tubing, copper and brass pipe shall not be used if the gas contains more than an average of 0.3 grains of hydrogen sulfide per 100 standard cubic feet of gas. CSST may be permitted provided that it is part of a system listed by an approved agency as complying with the reference standard listed in Chapter 16, Part III. Approved PE pipe may be used in exterior buried piping systems.

1311.3 Fittings. All fittings shall be approved for gas piping systems. The fittings shall be compatible with or shall be of the same material as the pipe or tubing. Fittings used in connection with the piping shall be of malleable iron, brass, bronze, copper, or approved plastic fittings. All fittings and components used with Corrugated Stainless Steel Tubing (CSST) shall be of the same listed system. Fittings used with copper or brass pipe shall be copper, brass, bronze or 45 degree flare fittings.

[Statutory Authority: RCW 19.27.031 and 19.27.074. 98-02-056, § 51-42-1311, filed 1/6/98, effective 7/1/98.]

2000 International Mechanical Code (p.19)
Chapter 3 – General Regulations – Section 301.3 - Fuel gas appliances and equipment

Section 301.3 Fuel gas appliances and equipment. The approval and installation of fuel gas distribution piping and equipment, fuel gas-fired appliances and fuel gas-fired appliances venting systems shall be in accordance with the *International Fuel Gas Code.*

2000 International Fuel Gas Code (p.50)
Section 403 (IFGC) – Piping Materials

Section 403.1 Material application. Materials and components conforming to standards or specifications listed herein and those approved by the code official shall be permitted to be used for the appropriate applications, as prescribed and limited by this code.

Section 403.5.4 Corrugated stainless steel tubing. Corrugated stainless steel tubing shall be tested and listed in compliance with the construction, installation, and performance requirements of ANSI/AGA LC 1.

John Loscheider:

Yes. Sections 1.5 provides a defined process by which modern technical methods, devices, and improvements can be used, even when they are not explicitly recognized by the code. In addition, Section 1.5.4 also requires that proposed alternatives must provide safety that is at least equivalent to the safety required or otherwise intended by the code.

MaryKate Martin:

Yes. NFPA 5000 sections 1.5.5 and 1.5.6 make provision for the use of "….construction systems, materials, or methods of design not specifically mentioned in this Code…..".

John McDonald:

Yes. Although I am not particularly well versed in this particular code, the NFPA Codes and Standards that I use on a regular basis generally adopt the latest technical methods, devices and improvements through the normal code revision process. Specifically in the case of NFPA 5000, Section 1.5 Equivalency, provide a means by which persons desiring to use alternative systems, materials and methods may file a request for permission with the authority having jurisdiction. While the provision for approval of alternatives exists, it may be argued that the process required is cumbersome and may serve to discourage its use.

Brian Minnich:

Yes. The NFPA 5000 code attempts to allow the use of modern methods, devices and improvements. However, meeting this goal may be difficult and is unclear due to the vagueness in code language. This could make it difficult to clearly define the performance criteria necessary to gain acceptance.

Bill Patterson:

Yes. The intent is that it does but by referencing additional codes/standards such as UPC that limit use of materials/methods flexibility is restricted.

Dwight Perkins:

Yes, the NFPA 5000 is the most contemporary building code available, it allows for alternate materials and methods of construction to allow for new, emerging technology. Chapters 4 and 5 allow for performance-based design thereby allowing for the modern use of technical methods, devices and improvements.

Dan Sexton:

Yes. The NFPA 5000 is the most current and up to date building code available today. Just like any other code, the NFPA 5000 allows for alternate materials and methods of construction. Sections 1.5.1 through 1.5.8 specify the method to using alternate materials and methods of construction. This is specifically in the code to allow for new or merging design and construction technology. These sections are augmented by the performance based design option, which specifies a clear objective and clear performance criterion to follow.

Dale Shafer:

Undetermined. Chapter 5 allows for performance-based options, so there is a path available to have new and innovative products and methods approved. However, there were examples given that shows that NFPA 5000, and its referenced standards, have not allowed the use of modern technical methods, devices and improvements that are currently available. Perhaps the most significant to the mechanical industry is the testimony about the conspicuous omission of the new flexible gas tubing products.

Larry Stevens:

Yes. The NFPA 5000, completed and released this year, must be the most current and up to date building code available today. The purpose of NFPA has apparently been to create a modern building code and provide for innovation and updating in the future. Like any other code it allows for amendment for alternate methods and materials.

Kraig Stevenson:

It makes the attempt and it appears the intent of the code is to allow modern materials, but is less clear than it should be on how to meet performance criteria for acceptance as an alternate method. We realize there are goals stated in Chapter 5 and Chapter 4, but many of these goals are stated with unenforceable language. For instance, failures that "could reasonably be anticipated to be experience," "provide reasonable access to buildings." Everyone has a different opinion on what is reasonable. Looks like all too often the decision of the AHJ will be appealed. This type of code writing is too problematic for proper code compliance.

Maureen Traxler:

Yes.

Leonard Yarberry:

Yes, but qualified. The acceptance of alternate methods is the prime method to incorporate new technologies. The code gives the AHJ the ability to accept alternates, but the language is very subjective by nature "a reasonable degree of safety" would be difficult for many to clearly agree upon.

Question 4 - Eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements, which could unnecessarily increase construction costs?

Sue Alden:

No. This is the first edition of the NFPA 5000 building code, available only a few months ago; not yet adopted in any jurisdiction; not used, tested and corrected over time; not yet coordinated with IAPMO's UMC and UPC codes and may never be, since they are on a different code cycle. A quick review has revealed conflicting, duplicating and erroneous text, which could increase costs and time to use. This would obviously increase the state amendments needed, plus considerable staff and volunteer (Council and TAGs) effort to correct and coordinate with our other state codes.

The need to acquire the 429 referenced publications, which must be had to assure compliance with this code, would be another cost burden for all code users. Since permit issuance is based upon proof of compliance with all laws and regulations, enforcers and designers are at risk for litigation, if they have missed anything.

Gary Allsup:

No. This is an untested code document. It appears to place additional requirements for annual reporting on performance-based alternatives.

Joe Baca and Ole Olsen:

No. There appears to be some conflicts between standards and documents, but anytime you produce new codes, it tends to drive costs up at implementation.

Lee Bailey:

No. This document contains no clear cut prescriptive building methods, creating the requirement for all projects to be professionally designed and engineered. These regulations are not currently applied to all projects. This document would add those unnecessary regulations. There are also requirements for redundant and passive systems, which by definition are duplicating. Because this document relies on adopted standards to replace code language, it will be problematic for designers, builders and administrators to use. It appears it will result in endless negotiation.

Jerry Barbera:

No. Just by going thorough the first few pages of the document I found provisions, the use of which are unwieldy, conflicting, and overly restrictive.

- For instance, the provisions in Section 1.7.5.3.1 for determining unsafe buildings are very excessive and overly broad.

- The overlapping of references to many NFPA Standards without constraints on their scope or without any apparent coordination will add excessive costs. (Also NFPA's family of companion documents, the IAPMO UMC and NFPA Standard # 54, the National Fuel Gas Code® conflict with each other relative to fuel gas line material and other details.)

- Another reason is the use of four Annexes, the first one of which is a commentary, will cause confusion and conflicting provisions because the opinions are not enforceable. Just look at index; pages 458 and 459 have at least 50 citations to Annex A. There are hundreds of these references in the Index.

- The reference to the IRC in Section 35.1.2.3 is potentially subject to conflicts and lack of context relative to the NFPA 5000.

Here are more specific explanations why NFPA 5000 doesn't meet the philosophical criteria of this Question # 4 and adds costs unnecessarily. Since there was not enough time to explore further, there are certainly other instances where :

- ✓ The definitions of "unsafe" buildings are undefined and not focused on specific reasons for the "danger."

- ✓ NFPA 5000 actually adds restrictive requirements because, as stated above, there is no limitation to the scope of referenced standards.

- ✓ The mandating of these referenced standards adds costs because one has to have most of them in order to apply and design to Standard 5000.

- ✓ Use of four Annexes (which are really commentaries) first mentioned on page 22 before Chapter 1 begins and also referenced hundred of times in the index to the document will cause conflicts and confusion about what is legally required and what is not.

- ✓ We as code officials can only apply what is legally adopted and the commentaries belong in separate documents for the assistance of all users. A code is not a textbook. So the document is subject to internal conflicts.

- ✓ The suggestion of alternate provisions in the Annex A is disturbing. If there are alternates that are so good, they are not in the body of the regulations itself? An example is given in NFPA Table A11.3.1.2, on occupant load factors in Airports Why weren't these provisions put in the body of the Means of Egress Chapter in the first place? (There is similar discussion about Malls in Annex A and one again asks why isn't it in the legally applicable sections?) Clearly, NFPA 5000 is unnecessarily restrictive, conflicting information and obsolete.

- ✓ Some extra referenced standards are required because the Standards Making Process used by NFPA does not allow "competing" Standards to overlap requirements in others such as the NFPA 5000. This will cost hundreds of dollars more because much of the life-safety provisions are in NFPA 101A. The maintenance of the standard will be more difficult because of potential conflicts that arise between the two different committees working on the documents.

- ✓ There are no real prescriptive requirements in Wood and other Material chapters, which means that potentially only professional designs are allowed. These will unnecessarily increase construction costs and enforcement problems.

- ✓ Even though there is a reference to the IRC in NFPA Section 35.1.2.3, Item No. (6), the language used to reference it is unclear about exactly which "designed and constructed provisions" are to be used because of the statement right after it that they are, "subject to the limitation therein [the IRC.]" This causes confusion and unnecessary expenses.

Don Breiner:

No, there are more-restrictive, conflicting, duplicating and unnecessary regulations and requirements within NFPA 5000, and also between NFPA 5000 and the Referenced Publications. A large number of State amendments would be required if it is desired to maintain consistency with current practices and to prevent code users from misinterpreting the intent of this code.

Joe Brewer:

The NFPA 5000 is a NEW code. The goals regarding the elimination of obsolete and duplicative requirements are clearly outlined in Chapters 4 and 5.

Dave Cantrell:

No. Section 2.1 mandates both NFPA and IAPMO documents that cover the same requirements, yet they differ from one another (i.e., water heater location, propane appliance location, CSST piping) when comparing the current editions of each code. At this time, until the IAPMO Standards Council rules on appeals, there is no guarantee that the NFPA requirements will be included in IAPMO's UPC or UMC. I am also concerned that one- and two-family dwellings can be constructed in accordance with the IRC per Chapter 35 of NFPA 5000, yet provisions for piping penetrations are located in both the IRC and the UPC, not to mention NFPA 5000. This can create much confusion.

John Cochran:

No. The code contains conflicts and some duplicity caused by the overall format of the code. These characteristics are not readily apparent until you actually try to apply the code to specific situations. One example of increasing construction cost is the requirements in Chapter 40. Extensive amendments will be needed to correct and correlate NFPA 5000.

Jim Crowell:

Minimal. See response to questions 5.

Anjela Foster:

The code is comparable to all other codes being considered.

Jerome Geissler:

Yes. Unlike other building codes, the NFPA 5000 appears to be carefully coordinated with all of the other codes, most of which are already adopted in Washington State. For example, the Uniform Plumbing Code, the Uniform Fire Code, the Uniform Mechanical Code, and the National Electrical Code, to name a few. Other building codes, of necessity, must reference scores of National Fire Protection Association documents, but are not, and cannot be, as closely coordinated.

Tim Harden:

Yes, it appears to eliminate duplication.

Terri Hotvedt:

Yes.

John Loscheider:

Yes. This appears to be NFPA's intent. However, NFPA 5000 is the first edition of a new code, and it does have some conflicting and unnecessary provisions that will require another code development cycle in order to be addressed. In my opinion, if the current edition of NFPA 5000 is adopted in Washington, amendments will be necessary.

MaryKate Martin:

No. NFPA 5000 was developed and formatted in a manner that requires significant research to determine all of the requirements that pertain to any given construction proposal. Because of the number of full documents that have been referenced (See question 2), and the formatting issue, the potential for conflict and unnecessary regulations and requirements is greatly increased both by virtue of human error in trying to know where to find all requirements and the potential for conflict among the various standards. This unnecessarily complicates both the design and review of a project predictably requiring a lengthy negotiation process with designers to determine the final construction requirements. The net result is an unnecessary increase in design and construction costs

Letters (available on request) have been sent out by material suppliers that offer support for NFPA 5000 for adoption as the State code based solely on the fact that it requires redundant passive systems. NFPA 5000 like our current State Code already incorporates area and construction limitations as well as sprinkler requirements as well as fire resistive construction. Any requirements for additional passive systems I construe as restrictive, duplicating and unnecessary requirements.

John McDonald:

Yes. As is the case with other codes and standards, I believe it is the intent of the writers to eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements that would unnecessarily increase construction costs. However, from a practical standpoint, I am concerned that the extraction process used by NFPA may result in obsolete code provisions due to the fact that the revision cycles for the codes from which text is extracted may not coincide with the revision cycle for NFPA 5000.

Brian Minnich:

No. From the builders' perspective, the code does not eliminate restrictive or unnecessary regulations. In fact, the NFPA 5000 code adds additional requirements that will greatly increase the cost of construction – such as mandatory fire sprinklers in single-family homes. Overall, the homebuilders view the NFPA 5000 code as harmful to housing affordability.

Bill Patterson:

No. In this first edition the code contains many duplicative, conflicting, and unnecessary regulations and requirements that will impact construction cost. Chapter 1 defines any existing building that does not provide the exits or fire protection required by the code as a fire hazard that must be torn down or made safe in a manner acceptable to the AHJ. Upon adoption of the code the building department appears to assume an obligation to address the improvements that will need to be made to each "fire hazard". (There is a chapter titled "Retroactivity" which is "reserved" in this edition). In previous codes the AHJ has deemed a specific building a hazard to be dealt with; in the NFPA 5000 it is automatically determined placing liability on both the enforcement and the owner side.

NFPA 5000 also incorporates prescriptive provisions regulating all work on existing buildings. While rehabilitation codes have been growing in popularity, every jurisdiction that has adopted one has gone through an extensive analysis of their existing building stock and history of code requirements to tailor the code to their needs. Adopting this fundamental change in the way code requirements are applied to work in existing buildings shouldn't be done within the framework of just adopting a model code, or it will have enormous impact on defining applicable requirements and resulting construction cost.

Chapter one consistently uses compliance with ALL applicable laws and regulations as the basis for compliance with the code. Permit issuance must be based on proof of compliance with ALL laws and regulations (over 400 standards/codes listed); When the Building Official issues a certificate of occupancy he/she is certifying complete compliance with ALL applicable codes and regulations. NFPA states that alternates can be adopted OVER the requirements stated restricting the latitude the building official has in any acceptance of a lesser level of compliance.

NFPA's approach to mixed or multiple occupancy applies the most stringent code requirements for each of the occupancies throughout the building that will have enormous impacts on construction costs.

The code includes an extensive list of "goals and objectives" in Chapter 4 which provides an additional layer of compliance requirements on the project. This will impact the process of permitting, and exposure to liability. In case of property damage or personal injury the subjective requirements in the goals and objectives can provide the basis for a claim that for example the means of egress even though meeting the prescriptive requirements did not meet the intent of the goals and objectives. "Buildings shall be designed and constructed to reduce the probability of death or injury to occupants from falls during normal use". How is "probability" defined as a prescriptive or quantifiable requirement?

Dwight Perkins:

Yes, the NFPA 5000 is a new code; thereby obsolete regulations are not included. The NFPA 5000 has been produced as to not be conflicting, duplicating or increase the cost of construction.

Dan Sexton:

Yes. Restrictive, obsolete, conflicting duplicating and unnecessary regulations are a big problem with many existing codes. This Building code has been carefully coordinated with all of the other codes, (the Uniform Plumbing Code, The Uniform Fire Code, the Uniform Mechanical Code, the National Electrical Code, NFPA 58 Liquefied Petroleum Gas Code, NFPA 54 National Fuel Gas Code, NFPA 30 Flammable and Combustible Liquids Code, NFPA 30A Code for Motor Fuel dispensing facilities and Repair Garages, NFPA 99 Medical Gas Code, ASHRAE 90.1 and 90.2 to name a few) we are currently using. In addition it is coordinated with the many NFPA codes and standards that are referenced in the NFPA 5000 and the International Building Code. The International Building Code references some 50 NFPA documents, with which it is not coordinated. The only answer for addressing these problems with the International Building Code is by making more state amendments, which makes more work for the State Building Code Council. Additionally, great care is given to ensuring that the provisions within the NFPA 5000 are not over redundant. For example, NFPA does not eliminate all protection just because fire sprinklers are required. NFPA follows a balance approach to fire protection, utilizing extinguishments, alarming and compartmentation as necessary to ensure a safe building. This is backed up by scientific and empirical information collected by the NFPA, which maintains the largest fire databases in the world. It is also backed up by the NFPA fire investigations done by NFPA staff, which is invited to investigate and report on large losses occurring throughout the world.

Dale Shafer:

NO. NFPA 5000 appears to contain many errors, and confusing or duplicating requirements. These will make the code difficult to design to. Some of these may unnecessarily increase the cost of design and construction.

Examples of errors and confusing requirements:

a. Paragraph 1.7.6.6.3K requires that mechanical systems be inspected in accordance with Chapter 14 (Safeguards During Construction.) This appears to be an error; perhaps it should refer to Chapter 50 (Mechanical Systems.)
b. Paragraph 18.6.1.1.5's location is confusing. It appears to say that Places of Worship are not required to comply with the requirements of Day-Care Homes to operate a nursery while services are being held in the building. Does this mean that they have to meet the requirements of normal Day-Cares or is this paragraph in the wrong place; should it be referring to all of Chapter 18?
c. Having special mechanical system requirements for each of the occupancies seems cumbersome and confusing. For example all unvented gas heating equipment is prohibited from Educational Occupancies but only unvented fuel fired room heaters are prohibited from Day-Cares. This appears to indicate that we use direct-fired heating equipment (make-up air) in Day-Cares but not Schools.

Examples of Duplicating Regulations:

a. Chapter 50 references the National Fuel Gas Code and the Uniform Mechanical Code. Both of these codes specify such things as combustion air, equipment installation, flues, venting, etc. While it appears that the intent is for the National Fuel Gas Code to take precedence in cases of duplication, having two codes cover the same topic is confusing and makes system design more difficult. Similar duplications exist with fuel oil, exhaust systems and heating/cooling equipment.
b. In some cases the Uniform Mechanical Code is more stringent than the National Fuel Gas Code. Do we design to the most stringent requirements of just to the National Fuel Gas Code. For example, Uniform Mechanical Code has a probation against installing propane appliances in pits and basements. I can find no such probation in the National Fuel Gas Code.

Larry Stevens:

Yes. NFPA 5000 is designed to fit seamlessly into the Consensus Code Set and mesh with the other codes, many of which are written under the auspices of NFPA. In fact, because three of the four codes already adopted by Washington statute and reviewed by our Building Code Council (UMC, UPC, UFC) are part of the NFPA family of codes, adopting any other so-called "family" of codes that would cause conflicting and duplicating situations.

Kraig Stevenson:

It appears the NFPA code increases the cost of construction unreasonably. The NFPA 5000 Code refers to many technical requirements that not within the body of the code text, and these requirements are controlled by other outside sources. Outside the body of the NFPA code many costs will be incurred due to the lack of actual code text within the body of the code. This occurs primarily due to the NFPA practice of drawing from other sources of technical content not within the direct control of NFPA and their committees. There will be by construction of the code text different standards used for identical situations leading to conflicts and inconsistency of enforcement. The Fire Marshal representative at the TAG mention how problematic the formal

NFPA "Extraction Procedures" will be and the bad result this will have on the NFPA code & its use.

Maureen Traxler:

I say yes because I don't believe the problems will significantly increase construction costs. I do believe there are significant deficiencies in NFPA 5000.

NFPA refers to the set of related construction codes as its "C3 Codes". They are all intended to be "fully integrated", adopted together, and enforced as a unit. However, they aren't all on the same code cycle. The new editions of the C3 codes will be published in different years.

Updates to one code could likely create inconsistencies with the other codes the year after they're adopted.

Since NFPA 5000 is a brand new code that hasn't yet been adopted anywhere, it is inevitable that conflicts and duplication will be found. For instance, both NFPA 5000 and the IRC have appendix chapters dealing with radon. The current version of NFPA 5000 and the 2000 IRC both contain incorrect lists of Washington's high-radon counties; the list has been corrected for the 2003 IRC.

The code development process allows only one code change cycle for each edition of the code, which provides much less opportunity to make corrections. My experience with model code development has been that it often takes more than one try before a code change proposal is approved.

In Section 2.1 NFPA 5000 adopts the Referenced Publications in their entirety. By requiring compliance with entire standards, NFPA 5000 sets up an unnecessarily confusing system full of opportunities for conflicts and duplications. For instance, the International Residential Code is adopted in its entirety. Although I suspect only some portion related to structural design was meant to be adopted, it isn't clear which portions. Chapter 2 references Chapter 35 of the NFPA 5000, but doesn't indicate which portions of the IRC are adopted. Section 35.1.2.3 says "One- and two-family dwellings shall be permitted to be designed and constructed in accordance with the following reference documents, subject to the limitations therein: …(6) IRC, *International Residential Code*" It seems that NFPA 5000 means that the IRC may be used for structural design of one- and two-family dwellings, but it's unclear which portions of the IRC that includes.

Leonard Yarberry:

No. I answer no after a great deal of thought. While it is clearly the intent to eliminate restrictive and obsolete language, I think that this is compromised by the complicated structure and methodology of the document. It is often necessary to go from reference to reference a number of times before arrival at the final correct provisions. Along the way there are many chances to misapply the intent. The lack of simplicity in format could by itself partially defeat the intent, and thereby cause unnecessary costs.

Question 5 - Retard the use of new materials and methods of installation?

Sue Alden:

Yes, as noted in the response to question 3, the burden on the innovator and the owner would retard the development and use of new materials and methods. All referenced codes are part of the requirements of this code, and some, such as the UPC, do restrict the use of certain materials and methods and do not seem to have the alternate option.

Gary Allsup:

Yes, has the intent, but possibly will be difficult to approve alternates.

Joe Baca and Ole Olsen:

No. I don't think it is the intent to retard, but some will undoubtedly occur as a by-product of the procedures.

Lee Bailey:

Yes. While I do not believe this is the intent of the author, I believe this will be the result of the complicated process required to gain approval for use of new methods and/or materials.

Jerry Barbera:

Although I don't think it was done intentionally, I have to say, yes, because of problems with Referenced and Alternate Standards mentioned in the answers to Items 1, 2 and 3 above and because of a lack of technical services to help the user. One specific example is the allowance of CSST gas piping in NFPA # 54 and rejection of it in the IAPMO UPC.

Don Breiner:

Yes, the process for approval of performance-based design alternatives [see response to (3) above] and the process for NFPA 5000 code revisions [see response to (10) below] may delay or hinder use of new materials and methods of installation.

Phil Brazil:

No. It does contain provisions for alternative materials, systems and methods provided their use and application are sufficiently substantiated by their proponent. But it lacks sufficient safeguards to ensure that their use does not endanger public safety. The proponent of an alternative material, system or method need only demonstrate to the code official their equivalency to that prescribed in the code in order to receive approval for their use. The code official is obligated to approve the alternative once equivalency is demonstrated and it is deemed to be incompliance with the code. See Section 1.5.

Joe Brewer:

No, this is a NEW building code. Chapters 4 and 5 are very helpful in outlining the goals of the code for performance in all areas.

Dave Cantrell:

Basically, no. I am somewhat concerned that structures meeting performance-based designs are required to submit an annual report showing conformance. This is a new requirement that is not mandated for prescriptive design. Therefore, it could curtail the use of performance-based design to some degree, yet I do not believe that this was the intent.

John Cochran:

Yes. The process to innovate is cumbersome. The code seems to lack criteria for determining performance and minimum equivalency. Section 4.5.4.2 will discourage use of new materials and methods of installation.

Jim Crowell:

Yes - extensive - see accompanying comments.

It is not the intent, but it is the result of all current building codes and their cumbersome process. When it requires a code expert to decipher the code relative to its requirements plus extensive education of each building official, neither a manufacturer nor a builder is going to make the effort to introduce new improvements to construction. That is why we are still building basically the same way we did at the turn of the century. NAHB and PATH list the introduction of stick framing in 1833 as the last major improvement to the construction of housing.

On the 7th of last month, I was working with my dynamic engineer to design the shape of structural members for our innovative method of construction. We tried but failed to ascertain the roof loading required to meet the 100-year and 500 year wind, snow, and earthquake records of the United States. When I posed this question at the initial NFPA presentation, both the NFPA and the IRC code presenters' answer was that it is there, but a code expert would need to have about 3 feet of manuals to find the correct answer. This retards the introduction of new materials and methods.

At the final TAG workshop, attention was called to Section 4.5.4.2 wherein it requires annual certification by the owner of a facility accepted per a performance-based design. That will be the death bell for any innovation where this code is instituted. No owner will accept those conditions. It will stop innovation.

Anjela Foster:

No. Alternate materials and methods are allowed.

Jerome Geissler:

Yes and No! This code dose not does not appear to unnecessarily retard new materials or methods construction, while allowing the use of emerging technology.

Tim Harden:

No, the appeals process should ensure that new materials and methods will be included.

Terri Hotvedt:

YES – See comment on "Installations" - Basement LP installations.

Installations:

Basement LP installations:

There is a potential difference between the two code groups, or at least between the current code and the future code in Washington state. The issue is the 1997 UMC prohibition on the installation of an LP appliance in a basement. This does not exist, to our knowledge, in the 2000 IRC. We also fail to find it in the 1999 National Fuel Gas Code, which raises the possibility that it has been dropped from the NFPA 5000.

On the International Code and the Propane issue, we are concerned about the I-Code's ambiguity regarding propane, i.e., it might open the door for event tighter restrictions and not allow the current installation of propane fueled hearth products in daylight basements which seems to be widely accepted at this point in time throughout the state.

John Loscheider:

No.

MaryKate Martin:

Yes. This document does not intentionally retard the use of new materials and methods of installation but the net result of the lack of documented technical support for code officials is to retard their use. Code officials must proceed with caution whenever they approve alternate materials but the NFPA 5000 document causes them to have to do more research than is currently standard- slowing the process and making it less likely for designers and builders to opt for new materials or methods.

John McDonald:

No. This code does not retard the use of new materials and methods of installation anymore than any other code. While all codes tend to carry a natural bias towards materials and methods already included in the code, there is no outright prohibition on their use. As is the case with other codes, NFPA 5000 provides provisions for the approval of alternative systems, materials and methods in Section 1.5

Brian Minnich:

No – NFPA 5000 appears to make an effort to allow new materials and methods of installation. However, we won't really know until the code is actually used.

Bill Patterson:

See response to questions 3 above.

Dwight Perkins:

No. Chapters 4 and 5 allow the use of performance-based design, which allows the use of new materials and methods of installation.

Dan Sexton:

Yes or No, All codes Retard the use of new materials and methods. The NFPA 5000 dose not unnecessarily retard new materials or methods construction, it allows for new, emerging technology. See answer to #(3).

Dale Shafer:

Undetermined. It is too early to determine if the rigorous process set up for accepting new materials and methods will work efficiently.

Larry Stevens:

Yes. We believe NFPA 5000 meets the legislative purposes. Together with question (4) above and (6) below, we believe NFPA 5000 is written to not unnecessarily increase construction costs, or unnecessarily retard the use of new materials and methods, nor provide unwarranted preferential treatment to materials, products, or methods.

Kraig Stevenson:

It seems the intent is not to retard the use of new materials. See comments that follow.

Generally, it seems the NFPA 5000 is making the attempt to allow the use of new materials, and to not retard their use. However, the code is not without its own problems. One issue is how and

when will documentation on alternative materials and methods conforming to the NFPA 5000 be available to the design and construction community. It would seem that this information will not appear overnight.

Section 1.5 of NFPA 5000 has the requisite language. The architect's representative at the TAG brought up a good point about NFPA code Section 4.5.4.2 for submitting an "Annual Fitness Warrant." There is no way this is practical, and it handicaps and retards any incentive to use alternate materials or methods of construction. This practice will add greatly to the cost of construction.

Maureen Traxler:

Not unreasonably. NFPA 5000 includes procedures for approval of new materials and methods of installation.

The issue of whether NFPA provides an appropriate minimum code affects the answer to this question. Section 1.5 allows building officials to approve alternate materials and methods, so long as they are at least equivalent to the requirements of the code. If the minimum standards of NFPA 5000 are too high, then approval of new materials would be retarded.

Approval of new products will be difficult unless NFPA establishes an effective product evaluation service similar to those operated by the other model code organizations.

Leonard Yarberry:

No. It is not the intent to do so, but as noted in previous responses, the subjective nature of the language does not provide clear direction to deal with alternates.

Question 6 - Provide unwarranted preferential treatment to types or classes of materials or products or methods of construction?

Sue Alden:

No. It is not obvious, yet Sections 4.5.4.2, 37.4 and 37.5 seem to do so. Section 15.5 advises that anyone wanting to use systems, materials or methods not specifically mentioned in this code must file for permission from the AHJ, with all the supportive documentation required by 1.5. This is a broad sweep, since no code can mention all such. As noted in the response to question 5, some referenced codes were in the past and may still be preferential.

Gary Allsup:

Yes, CSST gas piping and fire sprinkler requirements for example.

Joe Baca and Ole Olsen:

No. Be referencing the current mechanical codes, some does appear.

Lee Bailey:

A natural derivative of the process for approving new materials and methods will be the preferential treatment of established, historical systems.

Jerry Barbera:

Nothing was found by a superficial review of the document, which was all that could be done given the tight time line for the report to be made

Don Breiner:

No, that does not appear to be the intent. However materials, products or methods specifically included in NFPA 5000 may have inadvertently been given preferential treatment due to the process required for approval of materials, products or methods not included in NFPA 5000 [see response to (5) above].

Joe Brewer:

No, care was taken by NFPA and required by ANSI to ensure that preference was given to no manufacturer or group in the development of the NFPA 5000.

Dave Cantrell:

I would say no, except for some concerns expressed at the TAG that it seems to promote the use of fire sprinklers.

John Cochran:

No. However, the effect of Sections 4.5.4.2, 37.4 and 37.5 tend to do so.

Jim Crowell:

Somewhat. By providing criteria for testing/judging existing systems while not for performance-based or innovative systems makes it hard to introduce innovation.

Anjela Foster:

No. Code is comparable to all other codes being considered.

Jerome Geissler:

Again, Yes and No! This code does not appear to "provide unwarranted" preferential treatment of particular manufactured products.

Tim Harden:

No, the code appears to be neutral about this although some sections are quite a bit larger than the others I think this reflects the codes origin as a fire safety code.

Terri Hotvedt:

YES - See comments to Questions no. 3 and 5.

John Loscheider:

No.

MaryKate Martin:

Yes. The basis for the development of this document incorporates a process that intrinsically allows preferential treatment for any entity large enough and with sufficient financial resources to unduly influence the process, resulting in preferential treatment and leading to potentially unnecessary requirements to be included in the minimum code that favor their products and/or services.

John McDonald:

No. Although I believe all codes tend to carry a natural bias towards materials and methods already included in the code.

Brian Minnich:

No. It appears to not provide unwarranted and preferential treatment. However, we won't really know for sure until the code is actually used.

Bill Patterson:

See response to questions 3 above.

Dwight Perkins:

No. There are no preferences given to manufactures.

Dan Sexton:

No. Absolutely not, In fact preferential treatment of any particular manufactured product is not allowed.

Dale Shafer:

Undetermined. NFPA 5000 clearly gives preferential treatment to fire sprinkled structures over other passive fire protection methods. Whether this is warranted or not depends upon your point of view and how you interpret the available research data.

Larry Stevens:

Yes. See response to question 5.

Kraig Stevenson:

I don't think that it does. It could, see comments above in item # 5. Also, not all of the material interests were represented on the NFPA Technical Committee on Building Materials that developed the NFPA 5000. There is no guarantee that any interest group can be on the consensus body of the NFPA code.

Maureen Traxler:

No.

Leonard Yarberry:

No. It does not appear to.

Question 7 - What does the NFPA 5000 cover?

Sue Alden:

Section 1.1.1 states, "This code addresses those construction, protection and occupancy features necessary to minimize danger to life and property."

Phil Brazil:

It covers what one would expect from a building code.

Joe Brewer:

The NFPA 5000 covers the entire built environment. Requirements for commercial, residential and existing buildings are included. When the NFPA is adopted only one code is necessary for all of these areas.

John Cochran:

Section 1.1.1 addresses construction, protection and occupancy features necessary to minimize danger to life and property.

Anjela Foster:

The document is a comprehensive building code comparable to all other codes being considered. In addition, it places emphasis on firefighter safety, and secondary fire and life safety requirements not covered in other codes.

Jerome Geissler:

The NFPA 5000 appears to cover commercial and residential construction.

MaryKate Martin:

Building Construction.

John McDonald:

NFPA 5000 covers the areas one would expect to be covered by a model building code.

Brian Minnich:

Intended to apply to all buildings.

Dwight Perkins:

The NFPA 5000 covers the entire built environment for commercial and residential construction.

Dan Sexton:

Commercial and residential construction.

Larry Stevens:

As we did at the TAG meeting, we continue to object to the last four questions on this work plan. When the Council decided to create a TAG to review NFPA 5000 the Council agreed that any review be based on the legislatively stated purposes in RCW 19.27.020. After that agreement,

and as confirmed at the TAG meeting, the last four questions were drafted essentially by the aforementioned chairman of the TAG who has a built-in bias as a board member of the founding organization of the competing code writing group. These additional questions were not reviewed and approved by the SBCC.

What does the NFPA 5000 cover. The built environment.

Kraig Stevenson:

The NFPA 500 is intended to apply to all buildings and structures and their construction, repair, alteration, and equipment use. It covers the building uses, materials, fire resistance, and life-safety provisions. It is what people would consider a building code.

Maureen Traxler:

NFPA 5000 covers the usual topics for a Building Code. It also adopts by reference Mechanical, Electrical, Plumbing and Energy codes and standards.

Question 7 - How is the NFPA 5000 arranged?

Sue Alden:

According to the NFPA presentation, it is "occupancy based:
General (Chapters 1 through 15)
Occupancies (Chapters 16 through 34)
Structural (Chapters 35 through 40)
Materials (Chapters 41 through 48)
Building Systems (Chapters 49 through 55)
Annex Info (Annexes A through D, References and Index.)

Phil Brazil:

It is arranged in a reasonably logical order.

Joe Brewer:

The NFPA 5000 is a clear/concise occupancy driven document. The adoption of the NFPA 5000 will aid in the design, plan review, inspection and construction of safe structures.

John Cochran:

It is occupancy based. Occupancy types are discussed in Chapters 16 – 34; General Requirements in Chapters 1 – 15; Structural requirements are in Chapters 35 – 40; Material requirements are in Chapters 41 – 48; Systems requirements are in Chapters 49 – 55. However, mechanical requirements are also scattered throughout all of the occupancy sections.

Anjela Foster:

Very organized in arrangement, with general requirements that always apply, to specific occupancy based requirements.

Jerome Geissler:

NFPA 5000 appears to be arranged based on different occupancies.

John McDonald:

Although arranged differently from the codes we are used to working with, the arrangement of NFPA 5000 is neither good nor bad, just different.

Dwight Perkins:

The NFPA 5000 is arranged in a clear and concise format which is occupancy driven. This aids in the design and plan review of projects.

Dan Sexton:

In occupancy based format.

Dale Shafer:

Each occupancy group has special mechanical requirements, which are over and above the requirements in Chapter 50.

Larry Stevens:

It appears to be an easy to use format.

Kraig Stevenson:

As I best recall Mr. Robert Solomon, NFPA representative said in his formal presentation to the TAG on October 8, 2002 that the NFPA 5000 code is an "occupancy based" code and that there was not a real attempt to put the requirements into a logical order or system arrangement. Interpreting Mr. Solomon's statement, then, it is arranged in no particular order.

Question 9 - Can the NFPA 5000 be understood by various users including but not limited to:

- *a. Homebuilders;*
- *b. Professional designers;*
- *c. Specifiers;*
- *d. Code enforcement personnel.*

Sue Alden:

No. There was a comment at the last TAG meeting as to who might be qualified to answer these questions. With 52 years as an architect, using different codes across the country, with the last 32 years representing architects on building and fire code boards and councils, I feel qualified to respond to this question. We can all ultimately adapt to almost anything, but should a building code be made so very difficult to use? A building code should be a means of communication, to clearly and simply identify to its users the requirements needed to get a building permit, to complete construction and occupy that building. I believe this code fails to do this in a clear and simple manner. Other architects and code enforcement officials have also found this 2003 edition of the NFPA building code difficult to use. I offer the following reasons:

a) Its format, typography, numbering system and pagination hamper communication by making it difficult to follow and find information. The text has little emphasis and runs together without prioritization. In many cases, the numbering changes to letters; perhaps due to inadequate time to proofread.

b) NFPA decided not to "reinvent the wheel" but to reference other codes and publications for requirements. This code does not have the basic requirements in its text, but requires access to the 429 referenced codes, standards and publications listed in Chapter 2 (112 of them NFPA publications), "all of which shall be considered part of the requirements of this document." (2.1). With so many documents to go through, one never knows if all requirements have been found.

c) The many errors, omissions and duplications found in this 2003 edition would require many amendments to correct before the 2006 edition comes out. The rush to publication appears to not have provided adequate time for proofreading.

d) Its extensive use of subjective terms, such as "reasonable," "reduce the probability of," "appropriate," "high confidence of a low probability of," etc., makes application difficult for the enforcement and design community, leaving them vulnerable to litigation. Chapter 4 contains most of these terms, as well as adding another layer of compliance with its goals and objectives.

e) There is questionable prioritization by putting some sections in the body of the code rather than in the Annex. These are local conditions, not general, which could be adopted locally, as appropriate. Some examples would be Radon mitigation, Section 49.2.5 (Table A49.2.5.2.3 lists High Radon Potential (Zone 1) Counties. Washington State lists

27, only 9 are in this state; Figure 49.2.5.2.3 is too small and fuzzy to be read.); Flood Resistant Design, Chapter 39 and Annex C; Wildland/Urban Interface and Intermix, Section 4.5.7; and Chapter 40 Quality Assurance During Construction, which is costly and may be duplicative, and would better be an option selected by the owner. It covers too broad a segment of construction and would be inappropriate for many small and simple projects.

f) The most simple occupancy – One-Family Dwelling – was addressed by me as a test to see if the most common needs for design could be found clearly and easily in this code. Following are my findings from Chapter 22:

1) The definitions in 3.3.146.2 and 6.1.8.1.1 do not coincide with that in 22.1.1.2 for a one-family dwelling unit. There is no definition of "family" (extent of) for 22.1.1.2 and 22.1.6 notes there is no occupancy load.

2) There were found no minimum room ceiling heights listed or referenced, except for 22.2.6 Hallways at 84 in., with projections down to 80 in. No definition of hallways was found in the text; checked the Index, where it referred to corridors; no definition of corridors in the text; checked corridors in the Index, where it referred me back to 22.2.6 (where there is no definition of hallways). Checked the Index for Ceiling Height; was referred to 49.5.1, which referred to 11.1.5 for clear height of ceilings of all occupancies for rooms used for human occupancy. Chapter 11, Means of Egress, 11.1.5 Headroom says means of egress shall be designed to have "headroom as provided in other sections of this Code" and shall not be less then 7ft 6in with projections down to 6ft 8in, etc. 22.2.2 states the provisions of Chapter 11 shall not apply to means of escape, unless specifically referenced in this chapter. Is there a minimum ceiling height for rooms in this occupancy? I don't know. It is interesting that Chapter 15, Building Rehabilitation, clearly calls out a different ceiling height from 11.1.5 and clearly defines the minimum dimensions of rooms in this occupancy. I found no minimum room dimensions in Chapter 22.

3) Finding the requirements for a smoke detection system and occupant notification as required in 22.3.4.2, which referred to 55.2, for this occupancy seemed just as complex. It appears there is inadequate information given to decide whether to provide for a "total, partial, or selective system." One needs and interpretation.

4) 22.1.5, Minimum Construction Requirements, requires compliance with 11 listed chapters (which is the same for all occupancies). This occupancy is specifically exempted in Chapter 40, so why is it listed? Why is there a list for construction, but no one for other applicable chapters (such as 5, 10, 11, 49, 50, 51, 52, 53)?

5) Chapter 7 tables, and those in other chapters, often do not have a legend to explain the symbols used (such as the 3-digit numbers in Table 7.2.2), so one doesn't know how to apply the information.

6) Section 7.1.5 Fire Department Access is required to every building except when there are less than two dwellings, private garages, sheds, carports, and agricultural buildings. Then the AHJ may modify some of the requirements. If the requirements for access cannot be met, due to site conditions, the AHJ may require additional fire protection. It would be a serious cost impact to comply with the space required, paving, etc., especially in rural areas.

7) Section 22.5 refers to Chapter 50 Mechanical Systems, which lists 8 NFPA codes plus the 2000 UMC, which is to cover "all other" mechanical systems. Many of the listed NFPA codes listed seem to cover the same systems as the Uniform Mechanical Code. Are these duplications and conflicts? If so, which governs? There does not appear to be much left for the UMC.

8) Chapter 51 covers Energy Efficiency. Section 22.5 requires compliance for equipment in that chapter. Should it not also comply with envelope requirements? Not clear.

9) Chapters 49 Interior Environment, 52 Electrical Systems, and 53 Plumbing are not referred to in Chapter 22, as in all other occupancies. Must we conclude there are no electrical or plumbing requirements for this occupancy?

10) Referenced Chapter 35 Structural Design, 35.1.2.3 allows this occupancy to be designed and constructed in accordance with six listed documents, including the IRC International Residential Code. I would assume this would apply to only structural requirements but, if not, it could cover all aspects of this occupancy design, including ceiling heights, room dimensions, fire alarm systems, electrical, plumbing, mechanical and any other design issues in doubt in this code (NFPA). That would make the design of one-family dwellings much easier and less expensive.

Gary Allsup:

Yes. The typical homebuilder will struggle with this code document and will turn to the code enforcement official for assistance thus placing an increased demand upon code officials. Designers, specifiers, and code officials can learn this code given extensive training and time which all relate to a dollar / time investment. The format of this document adds directly to the difficulty that all industry personnel battle.

Joe Baca and Ole Olsen:

The NFPA 5000 will be understood by those that work with it on a regular basis, if it is adopted. Someone who doesn't work with it will have trouble understanding it and using it, but they would also have trouble with the current code.

Lee Bailey

Because standards have been substituted for uniform code language, this document seems to be very complicated for office and field personnel to use.

Jerry Barbera:

Although I could have spoken as a designer or Code Consultant, I chose to address this in my present position as a Code Official.

I found the Standard to be overly restrictive and not easily administered. It has an unfriendly and unwieldy format and is not well formatted or readable. It has no prescriptive requirements despite some few references to 1 & 2 Family Dwelling "standards" that are not coordinated with NFPA Standard 5000 at all. Because of its very conservative reliance on both suppression of fire and fire barriers, it adds unnecessary costs with no real benefit provided for the owner, user, designer and builder and, of course, the enforcement community.

Since I am assistant code official for the Airport Building Department, I was interested how the NFPA 5000 handled occupant loads for concourses in SeaTac Airport. Looking at Table A11.3.1.2, I would have to conclude that I should use the "less concentrated use" category of 15 s.f./person and that results in an excessive amount of occupants. Looking at Annex A, Table A11.3.1.2, I find focused and fair provisions for determining occupant loads in Airports. Why weren't they in the body of the code? It would be very difficult to

Don Breiner:

No. Architects and Engineers, as well as most all other users would have difficulty understanding NFPA 5000 and its interface with the Referenced Publications. There are many reasons why NFPA would be more difficult to use, including:

[1] the need to obtain and correlate requirements of the Referenced Publications. For example, homebuilders would need to obtain other documents to find the requirements for lightwood framing;

[2] the need to look up and understand the hundreds of cross-references and external references in NFPA 5000. Unlike other model codes, NFPA 5000 lists most of these references by chapter, section or paragraph number only, without listing the title or subject. If the title or subject had been listed, the frequent or qualified user would often know whether that reference applies to the specific project, without having to look up each reference;

[3] the format of NFPA 5000 makes it difficult to use efficiently, due to no page breaks between Chapters and no identification of Chapters, Section or Paragraph numbers in the margins.

Phil Brazil:

Yes, for the most part. It requires the purchase of a substantial number of reference publications that contain the bulk of the technical engineering requirements. However, structural engineers are generally accustomed to this. The reference publications for structural wood design are notably confusing. Section 2.3.4 specifies the 2001 National Design Specification (NDS) for Wood Construction, the 2001 ASD Manual for Engineered Wood Construction, and the 1996

LRFD Manual for Engineered Wood Construction. None of these contain the necessary material related wind and seismic provisions familiar to practicing engineers and necessary for inclusion in any building code. The apparent intent is that reference to the ASD Manual includes reference to the 2001 Supplement to the NDS: Special Design Provisions for Wind and Seismic. But if this is true, it also makes the separate reference to the NDS in Section 2.3.4 redundant since it is also included in the ASD Manual. This will be confusing to the average code user.

Joe Brewer:

Yes, Yes,Yes, only one code is needed to meet the needs of all of the above and more. In adopting the NFPA 5000 Washington State will be meeting the needs of all groups through the adoption of one new code, not seven, as with the alternative.

Dave Cantrell:

Yes, with training and use.

John Cochran:

If this code were adopted today, all users would find it difficult to understand and use. With training and over time, along with extensive amendments, it likely could be understood.

a. Homebuilders; No. Homebuilders will have to purchase copies of the referenced standards to determine the requirements for residential construction.

b. Professional designers; No. The format is different than the traditional and previous model building codes. It is difficult to determine what requirements apply to specific situations. The numbering system and navigation needed to use the code is very unfriendly. It contains a lot of subjective and restrictive language, such as that used in Section 4.1.3.2.2.1, last part; "ensure", used in Section 5.2.4.4; "sufficient time", used in Section 5.2.4.5; "reasonably prevent"' used in Section 5.2.3.4; each subsection under Section 5.5.2, to name a few.

c. Specifiers; No. For the same reasons stated above.

d. Code enforcement personnel. No. For the same reasons stated above. The cumbersome numbering system and navigation needed to apply the code will potentially cause mistakes and incorrect interpretation of requirements.

Jim Crowell:

Only by a professional with training and/or experience. All codes are cumbersome and hard for the users. See #5 above. As the TAG members who are on the front line kept reiterating, codes are too hard for those who work with them the most - the general public.

Anjela Foster:

Yes. No different than any other code.

Jerome Geissler:

Yes. NFPA 5000 should be easily understood by specialty subcontractors.

Tim Harden:

Yes, I believe that the code once it becomes familiar will be understood by the user groups.

Terri Hotvedt:

Yes.

John Loscheider:

Yes, provided that the user is generally qualified to read and understand a building code. Given the increasing complexity of all modern building codes, this may be a challenge for some homebuilders and for some code enforcement personnel.

MaryKate Martin:

Ultimately, any document can be understood by professionals- designers as well as code officials. However, my personal experience with NFPA 5000 is that it is different enough in concept, format and requirements that it will take a significant investment in time and training in order to grow confident enough to administer or design to it effectively. My opinion is that it will take even longer for the level of expertise for other code compliance staff, plan reviewers, inspectors, and counter staff, to be able to understand and enforce the provisions effectively and efficiently. The negative impact to our communities will not be felt just in the learning curve, but also in the loss of professional resource to provide applicants with direction and technical support for their projects.

I do not believe homebuilders will ever be able to become comfortable with this document nor will they be willing to invest the time it would take to even have a superficial understanding of the requirements.

This document is much too different in approach from our current State codes, even if the same public goals are achieved, to be readily assimilated into the Washington State construction industry without substantial negative impact to all parties because of the difficulty in adjusting to the approach and philosophy.

John McDonald:

Yes. With sufficient training and experience members of any one of the constituent groups listed above could use and understand the code although it will be much more difficult for the infrequent user.

Brian Minnich:

Not without difficulty -- The National Association of Home Builders (NAHB) participated extensively with the building officials in the development of the International Residential Code. On the other hand, NAHB withdrew participation last spring in the development of the NFPA 5000 code. The IRC was created to be user friendly for the residential construction industry. The NFPA code applies to all construction and not just residential. BIAW believes the NFPA 5000 is not as clearly written and organized as the IRC and will be difficult for the residential building community to understand and comply with. In addition, it is BIAW's opinion a contractor will not be able to build a house solely using the NFPA 5000 code as a stand-alone document.

Bill Patterson:

No. Burdensome cross-referencing and extensive use of standards make the code difficult to use and understand. In one instance in Exits an exception permits openings in exit passageways in mall buildings per 27.2.2.7. That section doesn't mention openings but refers to 11.2.6. 11.2.6 specifies enclosure per 11.1.3.2, where the requirement was originally stated. The occupancy-based organization of a subject by subject approach provides a "road map" for application of some code provisions (e.g. means of egress) while other code requirements are contained solely in other chapters. For example, each occupancy chapter requires HVAC equipment to meet the equipment requirements of the Energy Efficiency chapter, but no occupancy chapter requires the building envelope to meet the Energy Efficiency requirements of the code. Application would be by reference to some other part of the code from possibly chapter 4.

Dwight Perkins:

a. Homebuilders: Yes. Homebuilders will only need one code.
b. Professional designers: Yes. The NFPA 5000 was developed with the design professional in mind in that the code is occupancy based.
c. Specifiers: Yes.
d. Code enforcement personnel: Yes.

Dan Sexton:

Yes, Anyone that can read and work with other codebooks can use this one, it should be easier. The basis for this code is used in over 35 states; it has a history of being user friendly as noted by the many construction professionals that use this format for a code.

Dale Shafer:

YES. I believe that the professional design community will be able to understand and use NFPA 5000. Although the format is cumbersome, a professional designer should be able work through it. I do have some concern for the casual or less sophisticated user. I think that they will have difficulty determining exactly what is required for a simple structure or system.

Larry Stevens:

Yes. This is an example of a biased question. The only groups listed are on record as supporting the competing code. As said by one participant, "if you can understand any building code, you can follow this one."

Kraig Stevenson:

Good experienced code consultants can eventually figure out the NFPA Code requirements. The NFPA Code is not user-friendly, but eventually it could be understood. I agree with Mr. Solomon that the code is not arranged in any particular logical order and this presents difficulties and increases the learning curve. The architect's representative gave and example at the TAG work session how difficult it is to use the NFPA 5000 code. She said there were many dead-ends and no requirements when the code directed you to other code sections. She said it is very difficult and cumbersome to use. Many TAG members agreed with how difficult the code is to use.

Maureen Traxler:

Yes, eventually. NFPA 5000 is organized based on a totally different concept that any of the Building Codes that have been in effect in Washington. To use NFPA 5000, one determines the occupancy appropriate to the building, and then uses only those portions of other chapters referenced in the occupancy chapter. The rest of the code doesn't apply to the building. I am finding that organization to be difficult to follow—it's difficult to determine whether certain portions of the code apply to particular types of buildings. I'm sure it will become clearer, but I don't think it will ever be easy to use. Reading NFPA 5000 seems to require a lot of flipping back and forth between chapters and following dead ends; another TAG member aptly described it as "rabbit trails."

Leonard Yarberry:

No. Enforcement personnel and design professionals, who are used to code language, would be able use the document. Homebuilders would have a difficult time with the arrangement of the document and would need two or three other referenced documents to construct a home. The NFPA document does not contain the full requirements for residential construction, but provides references.

Question 10 - Does the NFPA 5000 have an identifiable and transparent process in its creation and maintenance over time?

Sue Alden:

No. It does not appear to have an easily identifiable and transparent process. Page 9/99A, at the back of this code, outlines the sequence of events leading to the publication of this code. Further information was provided by NFPA, in print and in the presentations, over time. Each seems slightly different, but this is an evolving process, which is being refined but must always comply with ANSI process. I am still somewhat confused by its being called a "consensus" process with the majority of vote prevails. The definition of consensus is for unanimity of decision in all opinions. This does not seem an appropriate term for the NFPA process.

It seems lacking in what I would call "transparency" or openness of all opinions. Technical Committee meetings are open to anyone to attend (by any public or just NFPA members?), but an appointment must be made a week or so ahead and have the approval of the Committee Chair, to be able to speak. There does not appear to be any possibility of pro and con discussion from the audience at what one would call a public hearing, just the written comments. Committees discuss the proposals and written comments and take a straw vote, but all final votes are by written ballot. After the Report on Comments (ROC) there is no further public input. The NFPA members vote on the Committee action, there is a 20-day appeal period, and the Standards Council makes the final decision.

Since this is the first edition of this code, we are not certain about its maintenance process over time, but must assume there will always be compliance with the ANSI process. If it does not comply, it may take years to straighten out. Where does the code stand in the meantime? It was stated in the TAG meeting this was an ANSI approved code. I thought only the process was approved by ANSI, not the code.

Gary Allsup:

The process is identifiable, however the process seems to be closed in the respect that the council has the final ruling regardless of input. I would see the potential for bias influencing the code.

Joe Baca and Ole Olsen:

Yes. It would be for professionals that use it on a regular basis.

Lee Bailey:

I really have not had exposure to this process, so I cannot comment.

Jerry Barbera:

I have no hands on experience with the process and can't speak directly to this issue. Listening to the testimony, it appears that NFPA tries to maintain such an identifiable and transparent process.

Even though they rhetorically refer to their process as a "full and open [*true*] consensus," or "the right People, the Right System and the Right Codes" in reality, very few people have much influence in the committee process. Since enforcers are such a small part of the "true open consensus," the ability to craft practical administration of what are supposed to be minimum standards is made very difficult. The tendency seems to be towards making of overly redundant and conservative provisions

The 13 members of their Standards Council seem to have great power to change the results of the process after anyone appeals to them and although their results can be appealed, that process seems to be quite lengthy and cumbersome.

It was claimed that there can, however, be undue influence at the annual meetings by association members. For instance, NFPA Standard # 1720 about fire-fighter staffing. Reportedly, the assembly meeting was packed with bussed-in fire-fighters for all over to ensure that the conservative regulations were passed. (In fact, I heard Mr. Brewer, the NFPA representative, admit that this was a less than acceptable abuse of their system.} Most cities and counties here in Washington don't appreciate such apparent abuse of the "true consensus process" power especially when it will result in extra expense to their citizens without any "true" proof of any need.

According to the summary of the NFPA process on their website and some research I have made with the rules of procedure of the Standards Committee, they can accept or reject any proposal after the NFPA Committee votes on an issue. This is apparently done without public scrutiny and, if so, would not be transparent.

It is probably also worth mentioning that the code language which came through the IAPMO "true open consensus" process for their so-called "coordinated" plumbing code had some significant conflicts with NFPA Standard 54 (the "National Fuel Gas Code") in terms of the acceptable materials. The IAPMO membership voted to continue to reject Corrugated Stainless Steel Tubing for natural gas supply in buildings, for example. NFPA 54 has recognized that material approximately 15 years.

Since we haven't yet seen the 2003 IAPMO plumbing code, we don't know whether or not that conflict has been resolved or how. Any resolution of such conflicts will obviously ultimately become somewhat arbitrary and will necessarily not involve the entire "balanced" consensus body of the IAPMO organization but will rather be based on a somewhat arbitrary decision by the NFPA and/or IAPMO Standards Councils.

Don Breiner:

Yes, it has an identifiable process, although the details are apparently still being worked out by NFPA. No, it does not have a completely transparent process, as Committee votes on code revision proposals are by written ballot and become only advisory recommendations to the Standards Council in making the final decisions on proposals.
Additionally, within each NFPA 5000 three-year code change cycle there is only one 22-month code revision process for submittal and approval of proposals. Other model codes have two 18-

month or three 12-month sequential code revision processes within each three-year code change cycle. The ability to submit, review and approve proposals more than once during the code change cycle allows for modification and reconsideration of rejected proposals, so that those proposals deemed to have merit may still be incorporated in the next code issued. Multiple approval processes also can inform code users of approved code revisions up to two years before the next code edition is actually issued.

Joe Brewer:

Yes, the NFPA 5000 was developed through the most democratic/open process with no preference given to any group or class of membership. ANSI certification makes certain that the process is open and transparent.

Dave Cantrell:

No. Although the process is outlined for maintenance of the code, it has not gone through such a process yet. Having gone through the ANSI Consensus process with the IAPMO codes, part of the C3 Consensus code set, I find the process to be a bit confusing and to some degree equivalent to aiming at a moving target. Once a proposal is submitted, it becomes a technical committee project. The applicant no longer has control of his/her proposal and the outcome can be vastly different from the original goal of the applicant. The applicant cannot withdraw the proposal from the technical committee even if it is not achieving what was desired due to committee modifications. Further, the technical committee can change in membership during the process. Thus, as was the case with the IAPMO/NFPA process, the technical committee that considered comments on proposals contained 11 new voting members (principle and alternate members) over the committee that considered the original proposals the previous year. In some of the main proposals that I tracked, none of the added members voted to affirm the previous committee's action. Additionally, although the committee conducts a majority vote at the public meeting, a letter balloting is conducted after the meeting in a non-public function. The final results can differ from the vote at the meeting. Along with the uncertainty I find so far in the processes described above, there are a number of items that are currently before the IAPMO/Standards Council for review, these being items that were appealed or items where the technical committee and the IAPMO membership disagreed. At this time, I am still unsure as to the role of the IAPMO/Standards Council and to what degree the collective comment from the IAPMO membership will have on the final outcome.

John Cochran:

The process is identifiable. See page 9/99A. However, the process does not appear to be transparent. Formal interpretations require a 2/3 agreement. NFPA members vote. However, their decision appears to be subject to change by the Standards Council. The final step outline in their sequence of events, on page 9/99A, states, "Standards Council decides, based on all evidence, whether or not to issue standard or to take other action, including upholding any appeals." NFPA claims the code is certified by ANSI. However, ANSI limits their certification to only the process upon how the code was written, not the content. Criteria for membership to the Standards Council cannot be determined. The Standards Council determines membership on

the 17 Technical Committees. Code change cycles are not coordinated with related documents. Reports on proposals are issued for public comment.

Jim Crowell:

No.

Anjela Foster:

Yes. This code is an ANSI code and follows the ANSI process. This allows all interested parties to assist with code development for future improvement. In addition, NFPA has a proven track record in code creation and maintenance that has been in existence for many years.

Jerome Geissler:

Yes! No question! The electrical specialty subcontractors believe the ANSI approved consensus process used to develop the NEC as well as this NFPA 5000 is the most open and democratic process available. We believe the private sector, those who actually do the work, follow the code, ought to have a meaningful voice. We should not just be given lip service by building officials. We should have a vote. I think someone pointed out at one of the meetings that even the Washington State Legislature recognizes this -- the private sector has a vote on the SBCC, right?

Tim Harden:

The use of the ANSI standard development process ensures that the process is identifiable and transparent.

Terri Hotvedt:

Yes.

John Loscheider:

Yes. NFPA 5000 has been developed in accordance with NFPA's *Regulations Governing Committee Projects*. Copies of these rules are readily available from the NFPA and from their web site nfpa.org. The ANSI-compliant NPFA code development process comprises four distinct stages: Proposal Stage, Comment Stage, Membership Action, and Standards Council Action. All stages are open to the public for participation and observation, and written documentation is available for all action taken. During the development of NPFA 5000, I actively participated in all four stages as a representative of the National Council of Structural Engineers Associations (NCSEA), which currently comprises 12,000 practitioners in 34 states. Based my own first-hand knowledge, experience, and observation, it is clear that NFPA 5000 has been developed in strict accordance with NFPA's published regulations.

MaryKate Martin:

Not in my opinion. I will not comment extensively on this item because I have been unable to participate in the process. However, anecdotally, I have heard of voted decisions being changed in closed-door sessions, and other process issues that imply that the voting membership does not really have the final say regarding what becomes code requirements. Furthermore, the committee process appears to be disjointed and uncoordinated adding more fog to the process

John McDonald:

No. From the perspective of the Washington State Association of Fire Marshals, this is the pivotal issue. In the spring of 2001, the Washington State Association of Fire Marshals undertook an exhaustive study of the technical content and code development processes of both NFPA 1 and the International Fire Code. Participants in the study included code officials, representatives of the code writing bodies, industry representatives and other stakeholders. At the end of the study, the findings were presented to the association membership and they were asked to complete a survey that include questions on the codes and the processes used in their development. The results of the study indicated that the codes were relatively equal in regard to the technical content. While the codes may use different means for addressing a problem, they both provide an adequate level of safety. When it comes to process, that is a different story. Although NFPA 5000 has an identifiable process, it is not transparent. The code adoption process used by NFPA is highly susceptible to influence as evidenced by the debate over NFPA 1710 and 1720. While voice polling of committee members takes place at the committee meetings, the final vote is done by mail. One would have to ask if that meets the definition of transparent. The extraction process used by NFPA makes modification of code provisions under the jurisdiction of other committees difficult particularly if they are on different revision cycles. The cost of monitoring multiple committees and attending numerous meetings makes it difficult to stay involved and track changes to the various documents. Even the codes within the C3 set of Comprehensive Consensus Codes are not on the same revision cycle. While these numerous questions regarding the NFPA process exist, ultimately the code meets muster from a technical standpoint so only time will determine the true answer to this question. But then again, perhaps there are too many questions.

Brian Minnich:

No. The process is difficult to understand. Although the IRC process is not perfect, BIAW believes it is a fairer code development process for all concerned. The NFPA process seems to be susceptible to various interest groups who can "pack the room" to push through a particular code change.

Bill Patterson:

No. The process to develop and maintain the code is identifiable, the "transparency" is not so apparent. The first edition includes hundreds of reference standards many of which appear to have had the referenced edition date selected by NFPA staff, totally outside of any public process. While technical committee meetings are open to the public, code change proposals and

public comments are not circulated until after the committee has acted (unless by specific individual request). Report on proposals from the committee is published for review and comment but there is no open meeting for discussion and a floor vote. Action by the Standards Council (no identification of members) occurs behind closed doors by a non "consensus" body, which can result in substantive changes to the document.

Dwight Perkins:

Yes. The NFPA 5000 has been developed by the most open and democratic system for code development. Anyone can participate at any level, with equality and without separate classes of voting.

Dan Sexton:

Yes. The NFPA 5000 is developed in the most open and democratic process. Anyone can participate at any level of the process. Anyone can submit proposals or comments attend and participate in the Technical Committee meetings. Technical Committee memberships do not prevent anyone from being on a committee based on occupation, and you do not need to be a member of NFPA to sit on a committee. NFPA does not discriminate against anyone in the voting process. Classes of membership are not segregating people into members with different rights. This is the biggest advantage of the NFPA process; it allows all interested parties to participate, just as the Washington State Building Code Council is not limited to just code officials.

The process is completely protected from interference from special interest through measures taken in the rules of procedure. It takes a 2/3 majority to pass anything from committee and no particular interest, such as code officials, can have more than 1/3 on a committee. Further the membership vote has special built in protections, such as membership for 6 months prior to voting privileges. It is not NFPA that guarantees this protection. While the NFPA uses their Standards Council to ensure the rules are followed, a completely unbiased third party, the American National Standards Institute, accredits the NFPA rules of procedure. Their purpose is to make sure the NFPA process is fair, open, provides a balance of interest without domination from any specific interest, provide due process, and provide means of appeals. If NFPA's process does not provide those attributes, an independent third party organization will strip its accreditation. No other model building code is under this type of scrutiny, none.

Dale Shafer:

Undetermined. It is too early to determine if the process will be fair and open. Although NFPA has taken steps to insure that it will be, there were some concerns raised by the TAG.

Larry Stevens:

Yes. Unlike "government approval codes," the ANSI approved consensus process utilized by NFPA 5000 is uniquely identifiable and transparent in its creation and maintenance over time.

Kraig Stevenson:

The NFPA 5000 code does not have an identifiable or transparent process used for its creation or maintenance over time. It has been stated by Robert Solomon and Bonnie Manley, NFPA representatives, that the NFPA Code was developed under the NFPA Regulations for Development of Committee Projects, as accredited by ANSI. However, the NFPA Bylaws allow for alternate methods for developing their standards and publications. There is no guarantee the NFPA 5000 will always be maintained under an ANSI accredited process. There is no public law, national, state or local governmental ordinance in existence that requires NFPA to use rules as accredited by ANSI for the development of NFPA codes. NFPA is simply not bound by any law to do so. Ms. Bonnie Manley said the NFPA 5000 was not considered a public document until after it was published. The implication here is that they do not hold themselves or their process to the same high level of requirements that government requires of itself when developing regulations for the public good or public's use. The same high level of openness to participate in the NFPA code process simply does not exist as that which government requires itself to meet by statute when conducting the peoples business and writing regulations. NFPA stated the NFPA 5000 was not considered a public document in its development and this partially explains why their views and their definition of openness do not coincide with what the people expect of government or the development of rule through administrative rule making. NFPA means the doors to the meeting is not locked and you can go and watch the committee do its work. You are not given the right to testify at the committee meetings or to rebut false statements with documentation that you may have to show a contrary point of view. Simply, NFPA gives no right to attendees to provide testimony to any of their technical committees. Final decisions are made behind closed doors and are made with the reliance on information not made available to all material interests. All of this information can be determined by reading the actual rules and bylaws of NFPA. Mr. Robert Solomon stated in his NFPA presentation, that the NFPA process has much vested special interests and that each interest on the committee wants and does have the right to vote. Moreover, NFPA committee members are given the opportunity to change their vote after the committee meeting. This occurs behind the scenes and after their open-door committee meetings. Mr. Solomon said committee members can change their vote, and if some of their buddies get to the committee members and persuade them to change their vote. The NFPA rules do not require that every material interest be given a seat on the technical committee. Of the listed 9 interest groups that can serve on the committees the NFPA rules could allow for up to 6 of the groups to be excluded from the committee. The assignment of committee members is up to the discretion of the NFPA Standards Council. The NFPA Standards Council and the Board of Directors make these decisions, and they are not accountable to us citizens. However, we'll be bound by the requirements of their standards. All appeals are made to the NFPA Standards Council. The NFPA Standards Council is not required by ANSI rules to meet the balance of interest requirements as is required of the NFPA Technical Committees in order to be in compliance with ANSI accreditation. The NFPA Standards Council issues the standard and has the ability to overrule the technical committees. If an appeal is made past the NFPA Standards Council, the NFPA Board of Directors with no balance or accountability to the people or to government will hear and decide upon the appeal. This question # 10 asks, "Does the NFPA 5000 have an identifiable and transparent process in its creation and maintenance over time?" It is not transparent, the NFPA process is too obscure and NFPA representatives have not been forthcoming with all the realities of their process. You have to questioned NFPA

representative extensively about the details. The NFPA process as represented by them, has not been without pretense or deceit. They have said each individual member gets a member vote, but as stated by Mr. Solomon it is not a vote that means anything. It is not a vote on the consensus body. It is only an advisory membership vote, yet it is also filed as an appeal of the technical committee's work. So, then is it advisory or is it directing an outcome, and it does show dominance by one select group. The NFPA process has had a history of packing the house with members that will vote in a pre-directed way. Undue influence and dominance of voting is an act that ANSI attempts to prohibit by accrediting rules, but the process does get manipulated. So the NFPA process is not transparent, for it is ripe with contradiction. It is not appropriate for developing codes. The ANSI process is appropriate for developing voluntary standards, as ANSI promotes. The NFPA process is not appropriate for the development of documents that become mandatory governmental codes.

Maureen Traxler:

I believe the process is identifiable. At the last TAG meeting I learned that NFPA publishes a manual on its code development process, but I haven't had an opportunity to read the manual.

It's not clear what is meant by "transparent." It seems the NFPA process has less opportunity to participate and to observe deliberations that is desirable

The NFPA 5000 process has some familiar characteristics: code change proposals are submitted, a hearing is held, a committee recommends whether to approve each proposal, comments on the committee recommendations are submitted, the members of the organization vote on the code change proposals that had comments. However, the NFPA process has some characteristics that seem to make it less than open and fair.

- Committee chairs have discretion not to allow those in attendance to speak, including proponents.

- Not all deliberations of the committees take place in public. After the hearing, the committees vote on their recommendation by letter ballot, leaving ample opportunity for additional efforts to persuade committee members outside the hearing

- The committees have unlimited authority to modify code change proposals by accepting them "in principle." The committees are not limited to the principle of the code change—they may make any modifications they wish, even modifications that subvert the intent of the original proposal.

- The membership vote is advisory; it may be revised by the Standards Council.

- Since all the codes aren't on the same cycle, if more than one code from the NFPA code set were adopted, it would be more difficult to participate—more hearings, more travel.

NFPA 5000 committees may not be allowed to amend all the sections of the Code—the NFPA Standards Council will make a decision on extraction policy in 2003. If they decide to include provisions in NFPA 5000 that are extracted from other NFPA standards, those provisions will not be available to the NFPA 5000 code development process. In order to change those provisions, it will be necessary to participate in a separate process.

Leonard Yarberry:

I am not sure. It appears that the development process would allow for special interest groups to have weighed input. The control of this seems to rest on the character of a small group of individuals. This is contrary to the representative process that local government traditionally uses.

Additional Comments

Joe Baca and Ole Olsen:

Comment: For those of us in construction that deal in the building part of construction, not design, are not regular users of the codebooks. We become familiar with codes that deal with our sections of work, but not the entire codes.

Lee Bailey:

This overview is extremely limited since there was insufficient time to study this document. No jurisdiction I am aware of has adopted this document as code so it has not undergone the years of evolution and evaluation necessary for the code development process.

Jim Crowell:

As a graduate in architecture with almost 60 years in the construction business, I qualify to represent architects, homebuilders, commercial construction, manufacturers, and the general public. As the founder of an entity that is about to introduce alternative methods of construction, I feel the industry and especially future homeowners will best be served if my remarks are taken in the context as to how the proposed NFPA 5000 (and all other codes) will effect the introduction of improved methods of construction.

Building Code's Goal: to serve the building codes' major clients ~ the general public and the building officials.

The Building Codes' primary client is the prospective owner. Every effort must be taken to insure that the owner receives the safest shelter that is as affordable and as environment friendly as possible. To accomplish this, the code must encourage innovation.

The Building Code's secondary client is the building official who must administer the code. Every effort must be taken to assist this person, especially those on the front line by providing as simplified and easy to interpret a document as possible.

It is not a question of ICC vs. NFPA vs. the current Washington Building Code, but rather - What building code would best serve the public and the building officials on the front line?

Overview: The proposed NFPA 5000, nor any other code, goes far enough toward the encouragement of innovation.

To reduce the cost of construction and/or to improve the end product, the industry needs innovative manufacturers. For an innovative manufacturer to invest in a new product and/or system, he must have a reasonable assurance that his product will be acceptable in enough jurisdictions to warrant the risk of his capital With our current building codes, it is a very complex and expensive process requiring the education of each individual building official before a major new product or construction system can be used. With a nationwide standard by which a product or method could be rated, an innovative manufacturer could easily evaluate the potential of his new product and the building official would have a simple criteria by which to judge as to whether or not a new product or method will survive in the conditions of his jurisdiction.

Currently, the decision as to qualification under R104.11 is placed upon the building official without firm criteria from which to make the decision. You are asking your building official to act as judge and jury regarding applicability of an innovative building system - yet they are not fully qualified nor do they have set criteria by which to render a proper decision. As a result, the greater the innovation the more natural the reluctance to assume the risk. The task of those on the front line (architects, builders, and building officials at the counters) could be made easier by having a list of performance criteria for their region with responsibility for proof of compliance being placed on the shoulders of the proposer. A uniform set of criteria applied throughout the nation would provide a standard goal to accomplish and thus encourage innovation. Of even greater benefit toward encouraging innovation in the industry would be a chart by which an innovation could be categorized relative to how it rated in each of the important categories. The chart would be composed of potential destructive forces and a series of categories as to how the innovation would withstand those forces. Having submitted the proposed innovation to a set series of tests and conducted by recognized laboratories, a manufacturer would know how his product was rated and therefore where to apply for a building permit with his innovation. The impact is at the building permit counter. Having set the criteria for the proposed use of a structure in his jurisdiction, it would be a simple task for the building official to determine the feasibility of the innovation for the proposed use.

Please note that the architects and front line building officials on this TAG were strongly in favor of simplifying the code and in support of my proposal.

Example:

Lets say that an innovative method of construction per the following chart has been certified by approved laboratories as being Fire - C, Earthquake - B, Snow - D, Wind - B, Hail Resistance - D, and Energy - B. If the project is a single residence in Hawaii, the proposer should be quite confident because the major weaknesses are in snow and hail resistance. If the project were a theater in Aspen, the project would probably not be proposed because the building official would be expected to require higher ratings for fire, snow and hail resistance. In either case, it would be very easy for the building official to make his/her preliminary decision.

ROUGH DRAFT of CRITERIA

Category	Possible Ratings				
	A	B	C	D	E
Fire/Hour	Non C.	2	1	½	Combustible
Earthquake	7	6	5	3	1
Snow/lbs	100	80	60	40	20
Wind/mph	200	150	100	60	30
Hail Resistance					
Durability					
Energy/% of Model	150	125	100	80	40

I hope this will be of assistance in your endeavor. Granted, the chart is not complete nor the list of required tests developed. That should be the work of a dedicated TAG, similar to what the TAG the State of Oregon created for my earlier work. If Washington wants innovation, they must make it easier for the building officials to accept it. The state that first institutes this system will not only make the work of the building official easier, their people will benefit by being the first to have the best construction systems available.

Terri Hotvedt:

SBCC Staff Summary of Issues:

It would be most helpful if staff could provide a brief summary (synopsis or matrix) of the issues from the two TAG's. This comparison of codes could help the participants, and others, better understand the differences between the two Model Codes and current law.

Dale Shafer:

Dale Shafer, PE, is a professional consulting mechanical engineer designing HVAC, plumbing, and fire protection systems. Dale is also a member of the NW District Advisory Board for the Church of the Nazarene with responsibilities to help plan and construct various small facilities throughout the area.

Larry Stevens:

On behalf of the Mechanical Contractors Association we submit the following:

First, we want to place on the record our concern that this entire TAG process does not meet any reasonable definition of an "appearance of fairness." We agree with the concerns raised by the PHCC in a letter to the SBCC early this Fall before the TAG process was commenced: Two separate TAGs to review codes that will essentially compete with each other is improper; some of the "questions to be answered" were not developed by the action of the SBCC, but we find out at the TAG they were developed by the TAG chairman who has a built-in bias as a board member of the founding organization of the competing code writing group; a unique new standard is applied to these two TAG groups, i.e. "no recommendation allowed;" the SBCC showed its total lack of objectivity by recommending to the Governor that the I-Codes be adopted without even reviewing this code; not only are biased people allowed to pad the attendance and participation on the TAG, but the chairman, though humorously engaging in his disclaimer, again, has a built-in bias as a board member of the founding organization of the competing code writing group.

Kraig Stevenson:

Note: As explained jointly by the TAG Chairman, Dave Saunders, and Tim Nogler, Manager of SBCC staff, comments from all Model Code Organizations (MCO) will be received, but not tallied into the yes or no categories. For this reason there are comments below void of the yes or no.

The responses contained in this report of findings are as the result of looking specifically at the NFPA 5000 code, and not comparing to any other code but looking at it in and of itself. Additionally, it is relevant to have reviewed the NFPA Bylaws, NFPA rules for developing committee projects(Codes & Standards) as well as taking into account the remarks brought forth by other TAG members at the November 7, 2002 TAG work session for the NFPA 500 review.

APPENDIX C
NFPA STANDARDS COUNCIL PROCESS

Bylaws
ADOPTED MAY 1971
(AMENDED MAY 2001)
ARTICLE 1 NAME
ARTICLE 2 PURPOSES AND POWERS
ARTICLE 3 MEMBERSHIP
ARTICLE 4 MEETINGS OF THE MEMBERS
ARTICLE 5 BOARD OF DIRECTORS
ARTICLE 6 OFFICERS
ARTICLE 7 REPRESENTATIVES, COMMITTEES, AND SECTIONS

ARTICLE 8 DEVELOPMENT OF ASSOCIATION TECHNICAL COMMITTEE DOCUMENTS

8.1. For the purpose of these Bylaws, NFPA Documents shall mean Codes, Standards, Recommended Practices, Guides, and other documents of a similar nature developed in accordance with 8.2 or 8.3 of these Bylaws and any regulations adopted pursuant thereto.

8.2. Basic Method of NFPA Document Development.
(a) The Board of Directors shall appoint a Standards Council to provide for the administration of NFPA Document development activities including the establishment, appointment, and administration of Technical Committees. Except as provided in 8.3 of these Bylaws, the Standards Council shall be the issuer of all NFPA Documents. Members of the Standards Council shall be members of the Association.
(b) Regulations for the Standards Council and for the administration of NFPA Document development activities shall be adopted by the Board of Directors with the advice of the Standards Council. The Standards Council shall perform those duties assigned by such Regulations and any other duties assigned to it by the Board of Directors.
(c) The Board of Directors shall adopt regulations which provide a means of petitioning either the Board of Directors or a duly appointed committee thereof for review of decisions of the Standards Council.
(d) The membership of the Standards Council shall not include members of the Board of Directors.

8.3 Alternative Methods of NFPA Document Development.
(a) Notwithstanding the provisions of 8.2 of these Bylaws, the Board of Directors may, in its discretion, provide for consensus-based methods of developing and issuing NFPA Documents, alternative to the method set forth in 8.2. Such alternatives may include consensus-based methods for the joint development of NFPA Documents with other organizations or entities.
(b) Any alternative consensus-based methods for the development and issuance of NFPA Documents shall be set forth in regulations adopted by the Board of Directors.

ARTICLE 9 INDEMNIFICATION
ARTICLE 10 REGULATIONS AND STANDING RULES
ARTICLE 11 AMENDMENT

Standards Council Selection Process
ADOPTED BY THE BOARD OF DIRECTORS JANUARY 1991 (AMENDED NOVEMBER 2000)
1. The Regulations Governing Committee Projects states the following relative to the selection of individuals for the Standards Council:

"**2-1 General.** In accordance with 8.1 of the Bylaws, there shall be appointed by the Board of Directors a Standards Council to provide for the administration of NFPA standards development process, including the establishment, appointment, and administration of Technical Committees and Technical Correlating Committees.

2-4 Member Requirements. The Standards Council shall be composed of a group of thirteen members, including one who shall be appointed as Chair. Members shall be familiar with the technical and standards development functions of the Association and shall be selected from a broad range of appropriate interests. Members of the Council shall be members of the Association and shall not be members of the Board of Directors."

2. In order to assist the Board of Directors in selecting qualified individuals, the Standards Council has established the following guidelines regarding the makeup of the Council.

2.1. Council members shall be familiar with the technical and standards development functions of the Association. Council members must have served on one or more NFPA Technical Committees for a period of time sufficient to be familiar with the Regulations Governing Committee Projects and the standards adoption process.

2.2. Council members shall be selected from a broad range of appropriate interests. Although not a prerequisite for Council members or a limitation to Council membership, to the extent possible, an attempt is made to have one representative from each of the following interest categories on the Council:
•Architect/Engineer •Education •Fire Equip. Mfg./Dist.
•Health Care •Building Official •Electrical
•Fire Marshal •Insurance •Business/Industry
•Fed/State/Local Gov't. •Fire Service •Research/Testing
•Trade/Professional Assns.

2.3. While not mandatory, an attempt is also made to have representation from the nine classifications used to identify the principal interest of members on NFPA committees. These classifications are as follows:
•Consumer •Insurance •Research/Testing
•Enforcer •Labor •Special Expert
•Installer/Maintainer •Manufacturer •User

2.4. It is also desirable to have representation on the Council from certain major technical committees such as the National Electrical Code, Life Safety Code, Health Care Facilities, and Automatic Sprinkler.

2.5. Finally, the geographic location of individuals is taken into consideration and an attempt is made to have broad representation on the Council.

2.6. The primary consideration for membership on the Council is an individual with a personal and professional reputation of high integrity and a demonstrated commitment to the principles of due process, fairness, and the validity of the consensus standards procedures.
3. The Chair of the Standards Council reviews potential candidates for Council membership with Council members based on the above guidelines and recommends one or more candidates for each vacancy to the President. The President reviews the Council's recommendations with the Council

Secretary, the Chair, First Vice Chair, and Second Vice Chair of the Board prior to submitting final recommendations to the Board for approval.
4. If the status of a Standards Council member changes, including change of employment, organizational affiliation or funding source, the Council member must notify the Council Chair or Secretary immediately. The change in status including any change in interest category represented will be considered by the Council in determining whether or not there is a need to recommend a replacement for the member.
5. All nominations for Council membership will be submitted in written form on the form entitled: "Nomination for Standards Council Members", and returned to the Council Secretary prior to June 15 for consideration by the Council at the July Council meeting.

Regulations Governing Committee Projects

ADOPTED BY BOARD OF DIRECTORS OCTOBER 1996
(AMENDED NOVEMBER 2001)

Section 1 General Provisions.

1-1 Scope of Regulations. These Regulations cover the process of developing and revising NFPA Documents and the role of the Board of Directors, Standards Council, Technical Correlating Committees, and Technical Committees in this process. Procedures for establishing and operating these Committees are included as are requirements for processing Tentative Interim Amendments and Formal Interpretations.

1-2 Standards Council Guidelines.

1-2.1 General. The Standards Council may adopt guidelines to supplement but not conflict with these regulations. These shall take the form of Guidelines adopted and administered according to this section.

1-2.2 Approval. Guidelines shall include those key directives of the Council that deal with the governance of Technical Committees and Technical Correlating Committees and those groups subordinate to and established by the Standards Council. Such guidelines shall be adopted or amended by the Standards Council acting upon the affirmative vote of two-thirds of the Standards Council members present at a duly constituted meeting. Such Guidelines shall be submitted to the Board of Directors for approval.
Proposals for new guidelines or amendments to the existing guidelines shall be distributed to the Standards Council along with the agenda of the meeting at which they will be considered. Proposed amendments may be submitted to the Standards Council Chair in writing. The Chair shall inform the submitter in writing as to the disposition of his or her proposal. Guidelines shall be published and available on request.

Section 2 Establishment and Operation of the Standards Council.

2-1 General. In accordance with 8.1 of the Bylaws, there shall be appointed by the Board of Directors a Standards Council to provide for the administration of NFPA standards development process, including the establishment, appointment, and administration of Technical Committees and Technical Correlating Committees.

2-2 Authority. The Standards Council shall be the issuer of Documents for the National Fire Protection Association. The Standards Council shall be responsible for applying these Regulations to the establishment, appointment, and administration of Committees of the Association and the adjudication of appeals (see 1-6). The Standards Council shall perform those duties assigned by these Regulations and such other duties as may be assigned to it by the Board of Directors.

2-3 Model Laws and Ordinances. The Standards Council shall review any NFPA model laws and ordinances not under the jurisdiction of any existing NFPA Committee project for consistency with the policies of the Association, prior to publication.

2-4 Member Requirements. The Standards Council membership shall consist of twelve Regular Members and a Chair. Members shall be familiar with the technical and standards development functions of the Association and shall be selected from a broad range of appropriate interests. Members of the Council shall be members of the Association, and shall not be members of the Board of Directors.

2-5 Member Terms.
(a) General. Except as provided in (b) and (c), Regular Members of the Standards Council shall be appointed for three-year terms and shall serve no more than two complete terms as Regular Members.
(b) Unfinished Terms. If a regular member leaves that position before the end of two complete terms, the Board of Directors shall appoint a successor as follows:
(1) If a Regular Member leaves before the end of his or her first term, the successor shall serve no more than the remainder of that term plus one additional term.
(2) If a Regular Member leaves before serving or completing his or her second term, the successor shall serve no more than the second term or any remaining portion thereof plus two additional terms.
(c) Staggering of Terms. Where necessary to ensure that the appointment of Regular Members to the Council is reasonably staggered, the Board of Directors may vary the number or length of terms, provided that no individual may serve a total of more than nine years as a Regular Member to the Council.

2-6 Chair. The term of office for the Chair shall be three years except that, where a Chair leaves office before the completion of a three-year term, the term shall end, and the successor Chair shall begin a new three-year term. A Chair shall not serve more than two terms as Chair.

2-7 Votes. The vote of the Standards Council regarding any action on the issuance of Documents shall be by two-thirds affirmative vote of all Council members present at the meeting. In calculating the required two-thirds affirmative vote within the Standards Council, those who abstain or who are not present shall not be included in the calculation of the vote. When, in the determination of the Chair, action between Council meetings is required on any matter other than the issuance of documents, such action may be taken by a vote conducted by letter ballot.

2-8 Board Report. The Standards Council shall report to the Board of Directors annually and at such other times as the Board of Directors may require.

2-9 Secretary. There shall be appointed by the President, from the staff of the Association and with the approval of the Board of Directors, a Secretary to the Standards Council. The Secretary shall perform such duties as included in these Regulations.

2-10 Council Deliberations. Unless the Standards Council determines otherwise, Council deliberations concerning appeals shall be in executive session. In addition, the council may, within its discretion, deliberate in executive session concerning any other matters within its authority.